A11102 145848
NAT'L INST OF STANDARDS & TECH R.I.C.
A1102145848
Moore, Charlotte Emm/A multiplet table o
QC100 .U573 V40;1972 C.1 NBS-PUB-C 1972

NSRDS—NBS 40

NBS
PUBLICATIONS

A Multiplet Table of Astrophysical Interest

1945 Edition

Part I—Table of Multiplets

Part II—Finding List of All Lines in the Table of Multiplets

U.S.
DEPARTMENT
OF
COMMERCE
National
Bureau

QC
100
.U573
no.40
1972
C 2

NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards[1] was established by an act of Congress March 3, 1901. The Bureau's overall goal is to strengthen and advance the Nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the Nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau consists of the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, the Center for Computer Sciences and Technology, and the Office for Information Programs.

THE INSTITUTE FOR BASIC STANDARDS provides the central basis within the United States of a complete and consistent system of physical measurement; coordinates that system with measurement systems of other nations; and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce. The Institute consists of a Center for Radiation Research, an Office of Measurement Services and the following divisions:

Applied Mathematics—Electricity—Heat—Mechanics—Optical Physics—Linac Radiation[2]—Nuclear Radiation[2]—Applied Radiation[2]—Quantum Electronics[3]—Electromagnetics[3]—Time and Frequency[3]—Laboratory Astrophysics[3]—Cryogenics[3].

THE INSTITUTE FOR MATERIALS RESEARCH conducts materials research leading to improved methods of measurement, standards, and data on the properties of well-characterized materials needed by industry, commerce, educational institutions, and Government; provides advisory and research services to other Government agencies; and develops, produces, and distributes standard reference materials. The Institute consists of the Office of Standard Reference Materials and the following divisions:

Analytical Chemistry—Polymers—Metallurgy—Inorganic Materials—Reactor Radiation—Physical Chemistry.

THE INSTITUTE FOR APPLIED TECHNOLOGY provides technical services to promote the use of available technology and to facilitate technological innovation in industry and Government; cooperates with public and private organizations leading to the development of technological standards (including mandatory safety standards), codes and methods of test; and provides technical advice and services to Government agencies upon request. The Institute also monitors NBS engineering standards activities and provides liaison between NBS and national and international engineering standards bodies. The Institute consists of the following divisions and offices:

Engineering Standards Services—Weights and Measures—Invention and Innovation—Product Evaluation Technology—Building Research—Electronic Technology—Technical Analysis—Measurement Engineering—Office of Fire Programs.

THE CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY conducts research and provides technical services designed to aid Government agencies in improving cost effectiveness in the conduct of their programs through the selection, acquisition, and effective utilization of automatic data processing equipment; and serves as the principal focus within the executive branch for the development of Federal standards for automatic data processing equipment, techniques, and computer languages. The Center consists of the following offices and divisions:

Information Processing Standards—Computer Information—Computer Services—Systems Development—Information Processing Technology.

THE OFFICE FOR INFORMATION PROGRAMS promotes optimum dissemination and accessibility of scientific information generated within NBS and other agencies of the Federal Government; promotes the development of the National Standard Reference Data System and a system of information analysis centers dealing with the broader aspects of the National Measurement System; provides appropriate services to ensure that the NBS staff has optimum accessibility to the scientific information of the world, and directs the public information activities of the Bureau. The Office consists of the following organizational units:

Office of Standard Reference Data—Office of Technical Information and Publications—Library—Office of International Relations.

---

[1] Headquarters and Laboratories at Gaithersburg, Maryland, unless otherwise noted; mailing address Washington, D.C. 20234.
[2] Part of the Center for Radiation Research.
[3] Located at Boulder, Colorado 80302.

National Bureau of Standards
AUG 8 1972
not acc.
QC 100
.U573
no. 40
1972
c. 2

UNITED STATES DEPARTMENT OF COMMERCE • Maurice H. Stans, *Secretary*
U.S. NATIONAL BUREAU OF STANDARDS • Lewis M. Branscomb, *Director*
National Standard Reference Data Series

A Multiplet Table of Astrophysical Interest

Revised Edition

Part I—Table of Multiplets

Part II—Finding List of All Lines in the Table of Multiplets

Charlotte E. Moore

Office of Standard Reference Data
National Bureau of Standards
Washington, D.C. 20234

Contributions from the Princeton University Observatory
No. 20, 1945
Reprinted by permission of the Director
of the Princeton University Observatory



t.
NSRDS–NBS 40

Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U.S.), 40, 253 pages (Feb. 1972)

CODEN: NSRDAP

Reprint of NBS Technical Note 36 (PB151395). See author's note, pp. v–vi.

Issued February 1972

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
(Order by SD Catalog No. 13.48:40) - Price $2.00
Stock Number 0303-0978

FOREWORD

The National Standard Reference Data System provides effective access to the quantitative data of physical science, critically evaluated and compiled for convenience, and readily accessible through a variety of distribution channels. The System was established in 1963 by action of the President's Office of Science and Technology and the Federal Council for Science and Technology, with responsibility to administer it assigned to the National Bureau of Standards.

The System now comprises a complex of data centers and other activities, carried on in academic institutions and other laboratories both in and out of government. The independent operational status of existing critical data projects is maintained and encouraged. Data centers that are components of the NSRDS produce compilations of critically evaluated data, critical reviews of the state of quantitative knowledge in specialized areas, and computations of useful functions derived from standard reference data. In addition, the centers and projects establish criteria for evaluation and compilation of data and make recommendations on needed improvements in experimental techniques. They are normally closely associated with active research in the relevant field.

The technical scope of the NSRDS is indicated by the principal categories of data compilation projects now active or being planned; nuclear properties, atomic and molecular properties, solid state properties, thermodynamic and transport properties, chemical kinetics, and colloid and surface properties and mechanical properties.

The NSRDS receives advice and planning assistance from the National Research Council of the National Academy of Sciences-National Academy of Engineering. An overall Review Committee considers the program as a whole and makes recommendations on policy, long-term planning, and international collaboration. Advisory Panels, each concerned with a single technical area, meet regularly to examine major portions of the program, assign relative priorities, and identify specific key problems in need of further attention. For selected specific topics, the Advisory Panels sponsor subpanels which make detailed studies of users' needs, the present state of knowledge, and existing data resources, as a basis for recommending one or more data compilation activities. This assembly of advisory services contributes greatly to the guidance of NSRDS activities.

The NSRDS-NBS series of publications is intended primarily to include evaluated reference data and critical reviews of long-term interest to the scientific and technical community.

Lewis M. Branscomb, *Director*

AUTHOR'S FOREWORD

The present Multiplet Table was first published in 1945 by the Princeton University Observatory; it has not yet been superseded. In 1959 it was reprinted as Technical Note 36 of the National Bureau of Standards. This issue is now out of print and is being reprinted as NSRDS-NBS 40.

The format is not being changed. In the present publication a special note has been added in the heading for those spectra included in "Selected Tables of Atomic Spectra," NSRDS-NBS 3, to indicate the existence of a Revised Multiplet Table.

August 2, 1971

ABSTRACT

Pending the completion of a current edition, the 1945 Multiplet Table is being reprinted here to meet continuing demands. The leading lines in 196 atomic spectra of 85 chemical elements are listed in related groups called multiplets. Estimated intensities, excitation potentials and multiplet designations are given for the individual lines, and each multiplet is assigned a number. An extensive bibliography covers the source material used for the compilation.

The Table is presented in two parts:

Part I includes the multiplets, with the spectra of each element being given in order of increasing ionization, and the elements in order of increasing atomic number.

Part II is a Finding List in which all the lines in Part I are entered in order of increasing wavelength, with their multiplet numbers.

The range of the Table is from 2951 Å to 13164 Å. A supplementary table of "Forbidden Lines" extends from 2972 Å to 12645 Å.

Key words: Atomic spectra, multiplet table; finding list, atomic spectra; multiplet table; spectra, atomic.

Library of Congress Catalog Card Number: 79–179666

Editorial Note—Spectra in Technical Note 36 (PB151395), for which revised data are given in NSRDS–NBS 3*

Page	Spectrum	Reference
2	C I	SEE REVISION IN NSRDS-NBS 3, Section 3, November 1970.
2	C II	
3	C III	
3	C IV	
New	C V	SEE Section 3, November 1970.
6	N IV	SEE REVISION IN NSRDS-NBS 3, Section 4, August 1971.
6	N V	
New	N VI	SEE Section 4, August 1971.
New	N VII	
15	Si I	SEE REVISION IN NSRDS-NBS 3, Section 2, November 1967.
16	Si II	SEE REVISION IN NSRDS-NBS 3, Section 1, June 1965.
16	Si III	
17	Si IV	

			Correction
Part I	2	He II	λ 6570.0 Ref. A has been corrected to λ 6527.10 Ref. P.
Part II	76	He II	λ 6570.0 has been corrected to λ 6527.10.

* See List of Publications in the National Standard Reference Data Series at the back of this book for information about obtaining these publications.

Author's Note on the Reprinting of the 1945 Princeton Multiplet Table: U.S. Department of Commerce, N.B.S. Tech. Note 36, (PB151395), 1959

The Multiplet Table that first appeared as Contributions from the Princeton University Observatory No. 20, 1945, is still a standard reference source used by astrophysicists, physicists, chemists, and many others. To date it has not been superseded and it continues to be in steady demand, although it is seriously in need of revision.

In 1959 this table was reprinted as U.S. Department of Commerce, National Bureau of Standards Technical Note 36 (PB151395). This issue is now out of print.

In view of the continuing requests, the Office of Standard Reference Data has decided to reprint Technical Note 36 as National Standard Reference Data Series-National Bureau of Standards, NSRDS-NBS 40, 1971, Parts I and II.

Similarly, Volumes I, II, and III of "Atomic Energy Levels," Circular of the National Bureau of Standards 467 are being reprinted in the same series, NSRDS-NBS 35, Parts I, II, III.

The present rapid technological advances by the astrophysicist in observing celestial spectra have created an urgent need for a current Multiplet Table of Astrophysical Interest. The correct interpretation of these spectra depends directly on the laboratory analyses of optical spectra. A critical compilation of spectroscopic data that provides the leading lines of individual atomic and ionic spectra of the more abundant elements, over the range from the x-ray to the microwave region is essential. In preparing such a table an effort should be made to envisage future developments in observing celestial spectra over this range and to design laboratory programs that will provide the requisite data.

Many gaps exist in our knowledge of atomic and ionic spectra. Sources that will produce clearly separated spectra in all stages of ionization for the elements H to Ni will be needed. Some of the less complex spectra can be traced along isoelectronic sequences, while more complex spectra have line lists containing thousands of lines. Encouraging progress is being made in the laboratory, where excellent spectrographs and carefully controlled sources can produce spectra that far outweigh the observations quoted in 1945.

Although it is not yet possible to provide a complete revision of this 1945 edition, current Multiplet Tables together with corresponding revised tables of Atomic Energy Levels are available for selected spectra. They are being published by the National Bureau of Standards under the title "Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables," as Sections of NSRDS-NBS 3. Section 1 contains these data for the spectra Si II, Si III, Si IV; Section 2 for Si I; Section 3 for C I, C II, C III, C IV, C V, C VI; Section 4 for N IV, N V, N VI, N VII. Similar tables for N I, N II, N III are in course of preparation as Section 5. A number of additional spectra are partially completed for inclusion in this series. These new Multiplet Tables cover the entire observed range of individual spectra, and, therefore, supersede not only the 1945 Multiplet Table, but also the Ultraviolet Multiplet Table which appeared as Circular of the National Bureau of Standards 488, Section 1, 1950; Section 2, 1952; Sections 3, 4, 5, 1962.

In the present reprinted issue of the Princeton Table, the individual spectra that have been revised are clearly indicated. Readers are urged to use the revised data for the spectra thus marked and to note further such revisions of selected spectra as they appear in this series.

This work advances slowly, although a number of revised analyses of spectra have been published that supersede the 1945 data. A bibliography in the National Bureau of Standards Special Publication 306, Sections 1, 2, 3, 4, 1968-1969, provides reference material on individual spectra to about July 1968, continuing from the reference listings given in the Volumes on Atomic Energy Levels.

The most serious need for revision is perhaps in the infrared data. Current references to work on the spectra H I to Ni I in the range > 7000 Å may be found in a forthcoming publication of the Proceedings of the Seventeenth International Astrophysical Symposium, on "Astronomical Spectra in the Infrared and Microwave Regions," held at the Institut d'Astrophysique, Université de Liège, Cointe-Ougrée, Belgium, June 28-30, 1971.

Washington, D.C.
August 2, 1971

Charlotte E. Moore

Part I—Table of Multiplets

TABLE OF CONTENTS

Part I. Table of Multiplets

		Page
I	Introduction	
1	Need for spectrum analysis	XII
2	Need for Multiplet Table	XII
3	Range of Present Table	XII
4	Importance of Multiplets	XII
5	First edition	XII
6	Arrangement of Table	XII
II	The Multiplet Table—General Considerations	
7	Astronomical Spectra	XII
8	Astrophysical importance of spectra, *H-Zn*	XIII
9	Elements *Ga-Ba*	XIII
10	Rare Earths	XIII
11	Elements *Hf-U*	XIII
III	Basis of Selection	
12	The Short Periods (*H-A*)	XIII
13	Nebular spectra	XIII
14	First Spark Spectra	XIII
15	Infra-Red Solar Spectrum	XIII
16	The First Long Period (*K-Kr*)	XIV
17	The Spectrum of *Fe* I	XIV
18	The Second Long Period (*Rb-Xe*)	XIV
19	Forbidden Lines	XIV
IV	General Arrangement of the Multiplet Table	
20	Size of Present Revised Multiplet Table	XIV
21	Periodic Table	XIV
22	Headings	XVI
23	Ionization Potential	XVI
24	Grading of Analysis of Individual Spectra	XVI
25	Grading of List of Individual Spectra	XVI
26	Date of completion of Individual Spectra	XVII
V	Arrangement of the Multiplets of Each Spectrum	
27	Spectrum Analysis—general arrangement of multiplets	XVII
28	Multiplet Designations—quantum numbers	XVIII
29	Incomplete Multiplets	XX
30	Unclassified Lines	XXI
31	Special Remarks on Individual Spectra	XXI
VI	Columns of the Table of Multiplets	
32	Wave-Length	XXI
33	Symbols	XXII
34	Intensity	XXIII
35	Excitation Potentials	XXIV
VII	Spectroscopic Notation	
	A Series Spectra	
36	Series Notation and Limits	XXIV
37	Special Cases	XXV
	B Complex Spectra	
38	Regular Notation	XXVI
39	Numbered Levels	XXVI
VIII	Special Notes on Individual Spectra	
40	*H, D, He* II etc.	XXVI
41	*Fe* I etc.	XXVIII

TABLE OF CONTENTS

Part I. Table of Multiplets—Continued

		Page
IX	Spectra Omitted from the R M T	
	42 Spectra of Astrophysical Interest—No Analysis	xxviii
	43 Analyzed Spectra without Astrophysical Importance	xxix
	44 Spectra for which nothing is known	xxix
X	Forbidden Lines	
	45 Basis of Selection	xxix
XI	Details of Publication	
	46 Revised Solar Identifications	xxxi
XII	Bibliography—Description	
	47 References used for Wave-Length, Intensity and Analysis	xxxi
XIII	Acknowledgments	
Bibliography		xxxix
Index by Pages		xliii
Index by Elements		xliv
Revised Multiplet Table		
	Body of Table	1–99
	Forbidden Lines	100–110

PREFACE

The preparation of a Multiplet Table that will meet the needs of all astrophysicists both now and in the future is an almost overwhelming undertaking. The most eminent workers would have to exercise careful judgment in handling the spectroscopic literature today. The writer has been bold enough to attempt it, only because of the many requests for a revision of the earlier Table and the enthusiasm with which it was received in spite of its many faults. Admittedly the present work is far from ideal. With all its limitations, however, it could never have been published without a vast amount of collaboration. The generosity and encouragement of spectroscopists and astrophysicists both at home and abroad has been the inspiration for this book. No two people would present the same choice of material, and the writer feels that her judgment has been far from adequate for this task. Whatever usefulness the volume may have is due to the many workers who have stood by, ready to supply material, to discuss puzzling questions and to offer the most valuable suggestions.

Since 1932 work on spectrum analysis has progressed so speedily that the *selection of data useful to the astrophysicist* has been one of the major problems. Requests for an entirely complete Multiplet Table have been received, but the purpose of this work has been to provide a book whose scope is limited—one that contains *astrophysically* useful data but is not unwieldy because of the inclusion of other material from the vast storehouse of spectroscopic literature now accessible. The bibliography should be consulted by those who desire more complete Tables of Multiplets.

More work of astrophysical importance remains to be done, chiefly on the spectra of the rare-earths and on the second spark spectra in general. It is hoped that a supplement can be prepared to cover these spectra and that a large part of the present work will prove to be definitive.

This book has been brought to a conclusion during the second world war. Consequently, restrictions of all kinds have been imposed and assistance has been limited. A very careful attempt has been made to prepare the manuscript accurately. The writer believes, however, that errors have inevitably been made in the compiling and editing of more than 25,750 spectral lines, for the work has been done with the minimum amount of clerical aid. She relies upon the users to detect serious errors and report them to her so that a list of errata may be published. Suggestions will be welcome.

Mention has been made of the cordial cooperation experienced from the beginning of this work. It could not now have been brought to a conclusion without the hearty and enthusiastic support of Henry Norris Russell, the author of the first list of multiplets of astrophysical importance. He has generously offered his valuable collection of data on spectra and has been ever ready to help in spite of the many complications that have arisen in carrying out such an extensive program.

Charlotte E. Moore

Princeton University Observatory
Princeton, New Jersey
April 3, 1945

A MULTIPLET TABLE OF ASTROPHYSICAL INTEREST

Part I

TABLE OF MULTIPLETS

I. INTRODUCTION

1. The detailed interpretation of stellar spectra demands of the laboratory investigators an ever increasing amount of careful work on spectrum analysis. With the impetus provided by Hund's theory, remarkably rapid strides have been made. Additional encouragement, particularly in handling complex spectra, has resulted from the great development of mechanical devices to decrease the enormous labor of measuring and reducing spectrograms. The valuable machine developed by Harrison at the Massachusetts Institute of Technology for this purpose has already proven its worth and promises much more in the future.

2. From an astrophysical point of view there is a definite need for a compendium of multiplets. The manuscript lists prepared for the present work have been almost continuously on loan to various investigators.

Spectrum analysis has not been carried far enough to compile a completely satisfactory Table. So many spectra have been analyzed, however, that to wait for perfection is to retard scientific progress. For many spectra "prediction" may be invoked to extend the existing lists of observed laboratory lines, and this has been done throughout the work. Three general classes of lines are tabulated: those observed in the laboratory; predicted "permitted" lines calculated from combinations among spectroscopic term values; and predicted "forbidden" lines.

3. A complete multiplet table would be welcomed by many scientists. It is not the purpose of the present work to furnish this. The range of wave-lengths is roughly from λ2950 to λ13000. The violet limit is imposed by the ozone in our atmosphere, which cuts off stellar observations beyond this region. In the infra-red the scarcity and inaccuracy of laboratory wave-lengths have made it necessary to predict many lines.

Even within these limits, only the lines thought to be useful in the interpretation of astronomical spectra are listed. These are selected from the elements sufficiently abundant to appear in stellar spectra, and from only those stages of ionization and types of excitation which are to be expected.

4. The importance of handling the various laboratory spectra by multiplets was stressed in 1925 by Russell,[1] who published the original multiplet table under the title "A List of Ultimate and Penultimate Lines of Astrophysical Interest." Useful as it was, this soon proved to be incomplete, not only because it was intentionally limited, but also because more data were becoming available. Work on spectrum analysis was proceeding so rapidly that an extension of his list was imperative.

5. When the writer was at the Mount Wilson Observatory in 1931 she prepared a solar multiplet table for private use in revising and extending the identification of lines in the solar and sun-spot spectra. This manuscript was constantly used by astronomers. In response to requests for copies, the laboratory data for light elements present in early type stars were added and a limited edition was printed in 1933.[2] This edition was out of date and out of print almost immediately—the demand for it had not been anticipated. To meet the situation the present book was planned; it is the first book designed from the start as a multiplet table for astrophysicists. For this reason, solar wave-lengths and intensities are excluded. It is essentially a manual of laboratory data needed by astronomers.

6. In the Multiplet Table (Part I) the *elements* are arranged in order of increasing atomic number. For each spectrum of each element the *multiplets* are listed in order of increasing energy level (see § 27 for details), and are numbered for reference. While such an arrangement is useful in studying stellar spectra, it introduces one serious disadvantage. The search for a *particular line* is laborious. This has been a widespread and an entirely justified criticism of the earlier Table. A Finding List has, therefore, been prepared and forms Part II of this Contribution. Here every line in the Revised Multiplet Table (hereinafter referred to as the R M T), is entered in order of wave-length, listing the spectrum to which the line belongs, and the number of the multiplet containing it.

II. THE MULTIPLET TABLE—General Considerations

7. The astronomical spectra forming the basis of selection of the elements, spectra and lines included, fall into several general classes. The sun receives first consideration. The observed solar spectrum now extends from λ2914* to λ13495, which accounts for the range covered in this Table. In addition, the spot and chromospheric spectra, stellar spectra of every type from Wolf-Rayet stars down through M-stars, including giants and dwarfs, spectra of novae and nebulae, and of the corona must be taken into account.

---

[1] *Mt. Wilson Contr.* No. 286; *Ap. J.* **61**, 223, 1925.
[2] A Multiplet Table of Astrophysical Interest, Princeton 1933.
* Accurate measures have not been made to the violet of λ2949.

8. The astrophysical importance of a spectrum depends upon the abundance of the element in the most favorable celestial sources, and the number and excitation potentials of the lines in the visible region. Almost all of the elements of atomic number 1-30 (*H-Zn*) have, on this account, preference over those that follow. The analyses of their arc spectra are almost all adequate for astrophysical purposes.

For the first spark spectra, which on the whole are more important, the analyses are fairly complete (except for *Mn* II and *Co* II) The lists for these spectra in the R M T include all but the weakest observed lines except for a few elements of low abundance.

The second spark spectra are less completely analyzed in the two short periods. In the first long period *Fe* III is complete and only a beginning has been made for any of the rest.

Detailed knowledge of spectra of more highly ionized atoms is confined to a few of the lighter elements.

9. The spectra of the elements from *Ga* to *Ba* are on the average considerably richer, and much less completely analyzed; but these elements are decidedly less abundant and the existing data are usually, though not always, fairly adequate for astrophysical purposes.

10. The rare earths, which are no rarer than neighboring elements in cosmical abundance, usually have rich spectra, which adds to their significance. The arc spectra rarely appear. The first spark spectra are important in many stars, and lines of the second spark spectra of several of them have recently been identified.[1] Analysis of the third spectra is barely begun; for the second spectra it is well advanced for six of these elements and well begun for four more.

The lists given here for the rare earths are approximately definitive for *La* II, *Eu* II and *Lu* II. It is hoped that greatly improved data for the others will be available in the near future. Extended tables for rare earths are likely to form the larger part of a supplement to the R M T.

11. The elements from *Hf* onward are of low abundance, and the data for them, though incomplete, meet most astrophysical needs tolerably.

III. BASIS OF SELECTION

12. The Short Periods (*H-A*).

These spectra are so important in the hotter stars that the lists are entirely or almost complete for all degrees of ionization included, except for a few elements of low cosmic abundance.

The spectra of Wolf-Rayet stars,[2, 3] novae and nebulae contain many "predicted" lines of these elements, not yet observed in the laboratory. For many light elements more predicted lines could probably have been included to advantage. More accurate values of predicted wave-lengths could also have been given, particularly in the spark spectra of *C*, *N*, and *O*. The precedent set by Edlén in his work on *Wolf-Rayet*[3] stars was followed. In many cases the term separations are known with sufficient accuracy to justify predictions to 0.1 A, although he uses no decimals. Use of the photographic method of reproduction for this book has prevented all but the most necessary alterations of the original manuscript. Changes later realized to be improvements have been omitted because of this restriction.

13. Bowen's [4] work naturally forms the guide for selecting material related to *nebular* spectra. The leading nebular lines are due to forbidden lines of the light elements. In anticipation of future needs, the lists of forbidden lines have, however, been greatly extended throughout the first long period.

14. No particular type of stellar spectrum has influenced the choice of lines from the first spark spectra of light elements. The lists have not been restricted to include only those lines known to be present in the stars. The abundance of the element has been the chief factor considered in omitting lines. For elements known to be fairly abundant, favorable predicted lines have been added. The lists are as extensive as the present state of analysis permits.

15. For some years Mr. H. D. Babcock at Mount Wilson, has been preparing for publication a monograph on the Infra-Red Solar Spectrum. His work now covers the interval λλ6600–13495 and includes approximately 7300 lines. The leading accessible lines of the arc spectra of most of the light elements lie in this interval. For example, important solar lines are unquestionably due to *H*, *C* I, *N* I, *O* I, *Mg* I, *Si* I, *P* I, and *S* I. In fact, the presence of phosphorus could not be detected until the solar observations were extended to the infra-red. The present Table has been compiled with Mr. Babcock's work especially in mind.

For unblended lines the solar wave-lengths in this region are far more accurate than many laboratory measures. *Si* affords an excellent illustration. The lines are sharp in the sun and the term separations among solar wave-

[1] Swings, *Ap. J.* **100**, 132, 1944.
[2] Payne, *Zeit. fur Ap.* **7**, 1, 1933.
[3] Edlén, *Zeit. fur Ap.* **7**, 378, 1933.
[4] *Rev. Mod. Phys.* **8**, 55 (No. 2), 1936.

numbers are so consistent that accurate solar term values can be calculated. These term values have been very useful in predicting wave-lengths. Similarly, the triplet and singlet "F" series of *Mg* I were extended with the aid of solar data.[1] The constancy of the term separations proves beyond doubt the correctness of the identifications.

16. The First Long Period (*K-Kr*).

The elements in the first long period from *K* through *Ni* constitute by far the major portion of this book (pp. 23–77), on account of the complexity of their spectra. Generally speaking, the arc and first spark spectra are well analyzed except for those mentioned in § 8. Many lines of these spectra (as far as *Cu*) are present throughout the entire range of the solar and sun-spot spectra, the flash spectrum, stellar spectra like those of γ Cygni and α Persei, and later type stars.

The only second spark spectrum in this group that can be given completely is that of *Fe* III. Astronomers eagerly await the definitive analysis of the rest.

17. The spectrum of *Fe* I deserves special mention. Although the importance of the analysis has long been realized, a complete monograph of this spectrum has only recently been published.[2] Practically every known line of *Fe* I is present in the sun. An amazing number of predicted lines agree well with solar wave-lengths. A statistical study of these coincidences indicates that most of them are real. For the statistical work the predicted lines were graded as "good," "fair," or "poor." The grades were based on the behavior of all the lines of each multiplet in the solar spectrum, the agreement in wave-length, and other factors. Only the "good" and "fair" lines have been published to date. Since the grading was severe, and since predicted wave-lengths are much in demand, many of the lines graded "poor," but considered useful to other workers, have been retained in the R M T.

18. The Second Long Period (*Rb-Xe*).

These elements are observed chiefly in the solar and sun-spot spectra and later dwarf stars. Except for *Y* II and *Zr* II the lists are restricted to the lines from low atomic energy levels. They are, however, more extensive than in the earlier Multiplet Table and slightly longer than are necessary to meet present needs.

19. Forbidden lines are assuming more and more significance in astronomical sources. A special section of the R M T (pp. 100–110) and one of the Finding List (pp. 87–96) are devoted to them. It is extremely difficult to predict what the future needs will be.

To list the array of possible predicted lines even among only abundant elements would be prohibitive. The present selection has been based largely on suggestions made by Dr. P. Swings. He was planning to publish a paper on this subject, but this was unknown to the writer when she was confronted with the problem of including them in the R M T. He generously suggested that they be given here instead of in a separate paper, and has examined the manuscript carefully. The author is extremely fortunate to have had the benefit of his extensive knowledge of both the theoretical and astrophysical aspects of forbidden lines while preparing this section of the Table. Details are discussed later in § 44.

IV. GENERAL ARRANGEMENT OF THE MULTIPLET TABLE

20. The foregoing remarks serve only as the most general guide to the scope of the material presented here. The book is colored throughout by individual judgment in the editing of spectroscopic literature. A serious attempt has been made to limit it in such a manner that it will be a useful astrophysical handbook. Even so, it is now more than twice the size of the earlier edition.

21. The elements in the R M T are discussed in order of increasing atomic number, and the spectra of each element in order of increasing ionization.

Table 1 gives a convenient arrangement of the Periodic Table of the elements. This Table is self-explanatory. The atomic number and chemical symbol of each element are given and elements with similar spectra in the short and long periods are connected by diagonal lines.

[1] Russell, Babcock and Moore, *Phys. Rev.* (2) **46**, 826 (No. 9), 1934. Babcock and Moore, *Ap. J.* **101**, 374, 1945.
[2] Russell, Moore and Weeks, *Trans. Am. Phil. Soc.* **34**, 111 (Part 2), 1944.

Table 1

The Periodic Table [1]

First Period	1 H		2 He															
Second Period	3 Li		4 Be		5 B		6 C		7 N		8 O		9 F		10 Ne			
Third Period	11 Na		12 Mg		13 Al		14 Si		15 P		16 S		17 Cl		18 A			
Fourth Period	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
Fifth Period	37 Rb	38 Sr	39 Y	40 Zr	41 Cb	42 Mo	43 (Ma)	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
Sixth Period	55 Cs	56 Ba	57* La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85	86 Rn
Seventh Period	87	88 Ra	89 Ac	90 Th	91 Pa	92 U												

* Atomic numbers 58–71—Rare Earths. See below.

Rare Earths	58 Ce	59 Pr	60 Nd	61 (Il)	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu

In Table 2 the elements are listed in the alphabetical order of their names. The successive columns contain, respectively, the name, the chemical symbol, and the atomic number of each element.

Table 2

Alphabetical List of Elements

Name	Symbol	Atomic No.	Name	Symbol	Atomic No.	Name	Symbol	Atomic No.
Actinium	Ac	89	Chlorine	Cl	17	Holmium	Ho	67
Aluminium	Al	13	Chromium	Cr	24	Hydrogen	H	1
Antimony	Sb	51	Cobalt	Co	27	(Illinium	Il	61)†
Argon	A	18	Columbium	Cb	41	Indium	In	49
Arsenic	As	33	Copper	Cu	29	Iodine	I	53
Barium	Ba	56	Dysprosium	Dy	66	Iridium	Ir	77
Beryllium	Be	4	Erbium	Er	68	Iron	Fe	26
Bismuth	Bi	83	Europium	Eu	63	Krypton	Kr	36
Boron	B	5	Fluorine	F	9	Lanthanum	La	57
Bromine	Br	35	Gadolinium	Gd	64	Lead	Pb	82
Cadmium	Cd	48	Gallium	Ga	31	Lithium	Li	3
Caesium	Cs	55	Germanium	Ge	32	Lutecium	Lu	71
Calcium	Ca	20	Gold	Au	79	Magnesium	Mg	12
Carbon	C	6	Hafnium	Hf	72	Manganese	Mn	25
Cerium	Ce	58	Helium	He	2	(Masurium	Ma	43)†

† Not isolated.

[1] International Chemical Symbols—1941.

TABLE 2—Continued

Name	Symbol	Atomic No.	Name	Symbol	Atomic No.	Name	Symbol	Atomic No.
Mercury	Hg	80	Radium	Ra	88	Tellurium	Te	52
Molybdenum	Mo	42	Radon	Rn	86	Terbium	Tb	65
Neodymium	Nd	60	Rhenium	Re	75	Thallium	Tl	81
Neon	Ne	10	Rhodium	Rh	45	Thorium	Th	90
Nickel	Ni	28	Rubidium	Rb	37	Thulium	Tm	69
Nitrogen	N	7	Ruthenium	Ru	44	Tin	Sn	50
Osmium	Os	76	Samarium	Sm	62	Titanium	Ti	22
Oxygen	O	8	Scandium	Sc	21	Tungsten	W	74
Palladium	Pd	46	Selenium	Se	34	Uranium	U	92
Phosphorus	P	15	Silicon	Si	14	Vanadium	V	23
Platinum	Pt	78	Silver	Ag	47	Xenon	Xe	54
Polonium	Po	84	Sodium	Na	11	Ytterbium	Yb	70
Potassium	K	19	Strontium	Sr	38	Yttrium	Y	39
Praseodymium	Pr	59	Sulphur	S	16	Zinc	Zn	30
Protoactinium	Pa	91	Tantalum	Ta	73	Zirconium	Zr	40

22. Headings.

Each spectrum of each element for which multiplets are given, begins with a heading containing four entries: the ionization potential, an astrophysical grade of the analysis, a grade of the list, expressing the fraction of classified lines listed, and finally, the date of completion of the manuscript of that spectrum. For example, *Cr* I (p. 37) starts with the heading

Cr I I P 6.74 Anal A List B March 1941.

23. The Ionization Potential.

For arc spectra many of these have been taken from the list published by Meggers in 1941.[1] For the first spark spectra he has kindly furnished a similar list [2] which has been extensively used. The monograph by Edlén [3] has furnished many more, but the values have been recalculated using the factor 0.00012345 instead of the one he used (see § 35). Edlén's unpublished values are quoted [4] for *Ne*. For many other elements the I P has been obtained from the limits published in the papers on analysis, as for Edlén's results. The list by Boyce [5] is frequently quoted, particularly in the section dealing with Forbidden Lines. Those interested in the source are advised to consult the part of the bibliography pertaining to analysis (Tables 9 and 10), or one of the above mentioned general lists.

24. The completeness of analysis from the standpoint of the astrophysicist (§§ 8–11) is indicated by four grades. "Anal A" signifies that practically all the important lines of wave-length > 2950 are classified, "Anal B" that only a small fraction remain unclassified, "Anal C" that a considerable proportion are unclassified and "Anal D" that the analysis is seriously incomplete.

This rating necessarily involves a large amount of opinion and should not be given too much weight. No two appraisements would agree completely. Its purpose is to indicate the present state of analysis with regard to the needs of the astronomer.

From the viewpoint of the physicist, the state of the *term* analysis of the various spectra has been similarly summarized elsewhere by means of grades A, B, C etc. With the aid of Hund's theory the physicist can compare the number of predicted and observed *terms* and assign a grade accordingly, whether or not most of the leading lines occur in a given region of the spectrum. Both Boyce [5] and Shenstone [6] have published extensive surveys.

On account of the different viewpoints, the two grades are often not identical for the same spectrum.

25. A similar grading "List A, B, C, or D" is introduced to indicate the percentage of classified lines of a given spectrum included in the R M T. Since all lines of each spectrum considered are not equally useful to the astrophysicist, the omissions have been much more drastic in some cases than in others. For example, practically every

[1] *Journ. Opt. Soc. Am.* **31**, 39 (No. 1), 1941.
[2] Unpublished material, April 1941.
[3] *Nova Acta Regiæ Societatis Scientiarum Upsaliensis* (IV) **9**, No. 6, 1933.
[4] Communicated by Swings in a letter, March 1945.
[5] *Rev. Mod. Phys.* **13**, 1 (No. 1), 1941.
[6] Reports on Progress in Physics **5**, 210, 1939.

line of *Fe* I observed in the laboratory is present or accounted for in the solar spectrum.[1] This applies to weak as well as strong lines. Hence, all classified lines of *Fe* I to the red of λ2950 are entered and the list entry in the heading is "List A". Most of the spark spectra of the first long period are in this class, unless the element is scarce in stars. For many spark spectra most of the observed lines are in the violet and ultra-violet. In such cases the list may be very short, although graded "List A". This means that only a small fraction of the total number of observed classified lines lie in the region considered in this book.

When all but the weakest classified lines are given, the list is graded "B". The spectra of *Na* I and *Mg* I illustrate "List B", the higher series members having been omitted as unimportant. In anticipation of requests for more material, the general policy has been to include slightly more than is necessary. Since all classified lines are not given, however, the list cannot be graded "A".

"List C" denotes that most of the strong lines are entered: "List D", that only the leading strong lines are given.

In grading the *lists*, unclassified lines have not been given consideration (although the stronger ones are listed after the multiplets of a spectrum). The purpose of this grading is to enable the reader to judge how many classified lines have been omitted, regardless of whether or not the *analysis* is complete. Thus for *Co* II few lines are classified, but all these are listed.. Hence this element is in the class "Anal C, List A."

26. The last entry at the head of each spectrum gives the month and year in which that section of manuscript was completed. This work has extended over such a long period that the date of publication does not apply even approximately to the date at which some spectra were last examined. It is hoped that the lists are up to date, but if important references have been missed, or if existing unpublished material should replace that included here, the writer invites such suggestions.

V. ARRANGEMENT OF THE MULTIPLETS OF EACH SPECTRUM

27. Reference must be made to some details of spectrum analysis in order to discuss the plan of presentation adopted here. In brief, the atoms of a gas, when excited by radiation, absorb certain wave-lengths corresponding to transitions of their outer electrons from lower energy levels to higher ones. From differences in the wave numbers of the observed lines, energy levels can be worked out, each line being produced by a transition between two such levels. Related *levels* are grouped accordingly to well known rules to form spectroscopic *terms*. Transitions between *terms* give rise to groups of related lines called *multiplets*.

In the RMT the terms of each spectrum have been arranged in order of increasing value of the component of *lowest* energy. This defines the relative level of the term, starting with the lowest term zero. The excitation potentials (columns 4 and 5) express in electron volts the values of the energy levels of those term components involved in the production of each line (see §35).

To illustrate, the lowest term of *Fe* I is a^5D. This term is made up of five energy levels whose E P's are respectively 0.00, 0.05, 0.09, 0.11 and 0.12. The next term is a^5F. Here the components have E P's 0.86, 0.91, 0.95, 0.99 and 1.01. For the purposes of this book the terms are considered in order of the lowest level of each, i.e. a^5D 0.00, a^5F 0.86 etc. This is to avoid confusion in spectra whose term values overlap seriously.

In each spectrum all multiplets with the same low term are in one group. The various groups are listed in the order of increasing value of the low terms. Within a group (which represents the combinations of a given low term with higher terms) the multiplets follow the order of increasing high term values.

For example, all combinations from a^5D of *Fe* I (Multiplets 1–11) form the first group. These multiplets are listed in order of increasing high E P, 2.39, 2.82, 2.93, 3.20 etc. The next low term is a^5F. The combinations from this term form the next group (Multiplets 12–31) etc.

In certain multiplets, the lowest components of one or both of the terms involved are not represented. This does not alter the arrangement.

Whenever the low level changes, the break in the continuity is indicated by three long dashes between the groups. For *Fe* I the first of these occurs between multiplets 11 and 12.

When terms are widely separated this arrangement results in listing the multiplets from a given low term in the order of decreasing wave-length of the leading line of each multiplet, since increasing energy of the high terms automatically results in increasing wave number, or decreasing wave-length.

The wave-length criterion alone was used for part of the R M T until the overlapping of terms in some complex spectra of the first long period introduced serious complications of arrangement. Then the more rigorous procedure

[1] Russell, Moore and Weeks, *Trans. Am. Phil. Soc.* **34** (Part 2), 111, 1944.

described above was adopted. Some spectra had been typed before the strictly orderly listing was put into effect. Owing to the excessive amount of labor involved in making such minor changes, slight irregularities of arrangement have not been corrected. For the greater part of the Table, however, the multiplets are in orderly array.

28. The energy *levels* that are grouped to form spectroscopic *terms* are defined by inner quantum numbers, commonly known as J-values. The terms have *multiplicities* (which are either all odd or all even in a given spectrum), and are further defined by azimuthal quantum numbers L which have the values 1, 2, 3 etc. for terms labeled S, P, D, F, G, H, I, K. The complete multiplet designation of any line includes all of these quantities for both the lower and upper energy level involved in the production of the line.

In the R M T a simplified plan has been adopted. The inner quantum numbers are listed separately from the rest of the designation, in column six, under the heading J. The J-value belonging to the lower term comes first and is followed by that of the higher term. In the next column, headed "Multiplet Desig" the spectroscopic designation of the lower term is always stated first, followed by a dash, then that of the higher term. For example, in multiplet No. 5 of *Fe* I the first line, 3719.935 has J-values 4–5. The rest of the designation is a^5D-z^5F°. In the complete notation the "4" appears as the subscript of a^5D and 5 as that of z^5F°, i.e. a^5D_4-$z^5F^\circ_5$. The complete designation of the second line λ3737.133, is a^5D_3-$z^5F^\circ_4$ etc. The "a" and "z" merely distinguish these ^5D and $^5F^\circ$ terms from others of the same type. This notation is discussed later in § 38. For both terms the superscript 5 denotes the multiplicity.

"Permitted" lines occur among combinations between two sets of terms, one "odd" and the other "even". The superscript "°" attached to ^5F tells that this is the odd term. When both terms belong to the same set (odd or even), the lines are commonly called "Forbidden".

Within a multiplet the arrangement of the individual lines is governed by the J-values. Each multiplet is entered as if it were written in multiplet array, i. e. the lines on the main diagonal come first, then the strongest satellite lines, then the next strongest etc. This is best illustrated by considering the inner quantum numbers, J, of each type of spectroscopic term. For convenience the J-values of all terms from S through I, of multiplicities 1–11 and 2–10 are given in Table 3, which applies equally to odd or even terms.

Even multiplicites are on the left and odd on the right half of the table. The types of terms (in order of increasing L value) S, P, D, F, G, H, I are in the vertical column on the left.

To arrange any multiplet in standard array, such as Multiplet No. 5 of *Fe* I, a^5D-z^5F°, find the J-values of the two types of terms (odd or even) from Table 3. The term ^5D is listed under multiplicity 5, and entry D on the left (J-values are 4, 3, 2, 1, 0). The term $^5F^\circ$ has J-values 5, 4, 3, 2, 1. Write these arrays as follows, with the *low* term *horizontally* arranged, and the *high* one *vertically* arranged:

z^5F° \ a^5D	$^5D_4$	$^5D_3$	$^5D_2$	$^5D_1$	$^5D_0$
$^5F^\circ_5$	x_1				
$^5F^\circ_4$	y_1	x_2			
$^5F^\circ_3$	z_1	y_2	x_3		
$^5F^\circ_2$		z_2	y_3	x_4	
$^5F^\circ_1$			z_3	y_4	x_5

Table 3

J-Values of Spectroscopic Terms

Multiplicity		2	4	6	8	10	1	3	5	7	9	11
L	Term											
1	S	½	1½	2½	3½	4½	0	1	2	3	4	5
2	P	1½	2½	3½	4½	5½	1	2	3	4	5	6
		½	1½	2½	3½	4½		1	2	3	4	5
			½	1½	2½	3½		0	1	2	3	4
3	D	2½	3½	4½	5½	6½	2	3	4	5	6	7
		1½	2½	3½	4½	5½		2	3	4	5	6
			1½	2½	3½	4½		1	2	3	4	5
			½	1½	2½	3½			1	2	3	4
				½	1½	2½			0	1	2	3
4	F	3½	4½	5½	6½	7½	3	4	5	6	7	8
		2½	3½	4½	5½	6½		3	4	5	6	7
			2½	3½	4½	5½		2	3	4	5	6
			1½	2½	3½	4½			2	3	4	5
				1½	2½	3½			1	2	3	4
				½	1½	2½				1	2	3
					½	1½				0	1	2
5	G	4½	5½	6½	7½	8½	4	5	6	7	8	9
		3½	4½	5½	6½	7½		4	5	6	7	8
			3½	4½	5½	6½		3	4	5	6	7
			2½	3½	4½	5½			3	4	5	6
				2½	3½	4½			2	3	4	5
				1½	2½	3½				2	3	4
					1½	2½				1	2	3
					½	1½					1	2
						½					0	1
6	H	5½	6½	7½	8½	9½	5	6	7	8	9	10
		4½	5½	6½	7½	8½		5	6	7	8	9
			4½	5½	6½	7½		4	5	6	7	8
			3½	4½	5½	6½			4	5	6	7
				3½	4½	5½			3	4	5	6
				2½	3½	4½				3	4	5
					2½	3½				2	3	4
					1½	2½					2	3
						1½					1	2
						½						1
												0
7	I	6½	7½	8½	9½	10½	6	7	8	9	10	11
		5½	6½	7½	8½	9½		6	7	8	9	10
			5½	6½	7½	8½		5	6	7	8	9
			4½	5½	6½	7½			5	6	7	8
				4½	5½	6½			4	5	6	7
				3½	4½	5½				4	5	6
					3½	4½				3	4	5
					2½	3½					3	4
						2½					2	3
						1½						2
												1

Only those combinations between the low and high terms, for which J changes by 0 or ±1 are "permitted". This rule restricts the number of lines to be expected to those denoted by x, y, and z, where the subscripts 1, 2, 3 represent decreasing J-values. The main diagonal lines are x_1–x_5. The first satellites are y_1–y_4 and the second satellites, z_1–z_3.

In the R M T, the lines on the main diagonal are listed first, in order of decreasing J-values. From the example, the first lines entered are those in the positions x_1, x_2, x_3, x_4, x_5 in the Multiplet. The line at x_1 has the designation a^5D_4–$z^5F^\circ_5$, at x_2 a^5D_3–$z^5F^\circ_4$ etc. In the R M T the lines of this multiplet appear in the following order:

	λ	J	Desig	
x_1	3719.935	4–5	a^5D–z^5F°	Main Diagonal
x_2	3737.133	3–4	"	
x_3	3745.561	2–3	"	
x_4	3748.264	1–2	"	
x_5	3745.901	0–1	"	
y_1	3679.915	4–4	"	First Satellites
y_2	3705.567	3–3	"	
y_3	3722.564	2–2	"	
y_4	3733.319	1–1	"	
z_1	3649.304	4–3	"	Second Satellites
z_2	3683.054	3–2	"	
z_3	3707.828	2–1	"	

An example of a symmetrical multiplet should also be given. Multiplet No. 12 of *Cr* II (p. 43) has the designation a^4P–z^4P°. Since the multiplicity (4) and type of term (P) are identical for both terms, the J-values are also identical. From Table 3 the J-values for a ^4P term are 2½, 1½, ½.

z^4P° \ a^4P	$^4P_{2½}$	$^4P_{1½}$	$^4P_{½}$
$^4P^\circ_{2½}$	x_1	y_1	
$^4P^\circ_{1½}$	**y_1**	x_2	y_2
$^4P^\circ_{½}$		**y_2**	x_3

Here both sets of satellites involve the same J-values, 1½–2½, ½–1½ and 2½–1½, 1½–½. Throughout the R M T for such cases, combinations in which J-values read from *larger* J to *smaller* J are entered first. Here, for example the pair 2½–1½, 1½–½ (y_1 and y_2 in bold face type above), precede the pair with J-values 1½–2½, ½–1½ respectively.

According to elementary theory the leading line of the principal diagonal is the strongest in the multiplet, and first satellites are stronger than the second, while the two sets of satellites in a symmetrical multiplet are comparable.[1]

In the majority of spectra intersystem combinations occur, i.e. those in which the multiplicities of the terms differ by 2 or even 4, as for example multiplets 1 and 332 of *Fe* I, a^5D–z^7D° and z^7F°–e^3G respectively. These multiplets often include strong lines, particularly for the heavier elements. The rule $\Delta J = 0$ or ±1 is strictly observed but there are no known formulae for the prediction of intensities, which are often apparently erratic. When intersystem lines are strong, intensities in regular multiplets often deviate from the formulae. The intersystem multiplets are arranged in the R M T on the "diagonal" basis described above, so far as irregularities permit.

29. For all types of multiplets the reader must bear in mind that the arrays described above, and the J-values in Table 3 give all the possible permitted *theoretical* transitions.

In many cases the R M T does not give theoretically complete multiplets. Reasons for this are:

1. When the strongest lines of a multiplet are likely to be very weak in astrophysical sources, the weaker ones have been deliberately omitted even though they may have been observed in the laboratory. Omissions are indicated by a "†" following the "Multiplet Designation".

2. Individual lines in a multiplet are sometimes much fainter than theoretically expected and have never been observed. Sequences along the diagonals are thus broken. For such lines predicted positions are given only when it is believed that they *may* be observable astrophysically.

[1] For details see Russell, *Mt. Wilson Contr.* No. 537; *Ap. J.* 83, 129, 1936.

3. In some cases one or more components of a spectroscopic term have not yet been indentified.

Such cases may be detected by comparing the column headed J for a given multiplet with the theoretical array of permitted lines, just described.

30. For the more important spectra, limited lists of the leading unclassified lines follow the multiplets. The R M T is not designed as a source for the investigator who is interested primarily in unclassified lines.

Three general factors have controlled the selection: the abundance of the element in astronomical sources, the grade of the analysis and the accuracy of the laboratory material. Under "Anal A" more lines will be unclassified for a complex spectrum like *Fe* I than for a simpler spectrum, but the percentage of strong lines will be small. Under "Anal B" there will be more and stronger unclassified lines than if the grade were A, etc.

If A. S. King has made a temperature classification of the spectrum the leading unclassified lines can be readily chosen from his lists. In such cases his temperature class follows the intensity in the R M T

Among arc spectra the lists of unclassified lines are longest for *N* I, *Ti* I, *Cr* I, *Mn* I, *Fe* I, *Ni* I, *Tm* I. Only a few lines are listed for *Si* I, *S* I, *Ca* I, *Sc* I, *V* I, *Co* I, *Y* I, *Lu* I, and none for any other elements.

For first spark spectra the lists of unclassified lines may be summarized as follows:

Limited	*Si* II, *A* II, *Fe* II, *Cb* II, *La* II, *Nd* II, *Sm* II, *Gd* II, *Tm* II.
Very limited	*O* II, *S* II, *Cl* II, *Ti* II, *V* II, *Cr* II, *Y* II, *Zr* II, *Ce* II, *Pr* II, *Eu* II, *Hf* II.
Measures inadequate	*Mn* II, *Co* II, *Ni* II.

Lists are given for only five "third" spectra: *C* III (where a dubious classification has been suggested for the lines) *N* III, *Si* III, *S* III and *Fe* III. The only one of any length is that of *Fe* III.

For some spark spectra, notably *La* II and *Fe* III it is not certain that the separation of the lines in different states of ionization is definitive. This is mentioned in the R M T under these spectra. For many spectra the separation is so uncertain that no unclassified lines have been included. For no spectrum is a complete list given.

31. A few notes are appended to the list of multiplets for certain spectra. These fall into two classes: those dealing with notation (see § 37), and those dealing with fine structure. This book does not discuss fine structure or isotope effects in any detail. Those spectra in which the fine structure or isotope effects should be called especially to the attention of the astrophysicist have this fact mentioned, as follows:

Li II	Very wide fine structure
Mg I, *Al* II	Fine structure
Hg I, *Tl* I	Many lines show fine structure
He II, *Bi* I	Wide fine structure.

VI. COLUMNS OF THE TABLE OF MULTIPLETS

32. Wave-length.

The data for each spectrum are given in seven columns. The first contains the *laboratory* wave-length in I A units. In the earlier edition solar wave-lengths were listed for all but the lighter elements (see § 5). Since any solar line may be a blend, it was decided to replace this entry by laboratory material. An effort has been made to select the best available wave-length for each line. The individual lists are far from homogeneous—there is often an enormous range in accuracy among the lines of a given spectrum.

The reference from which each line has been taken is indicated in column two, by the letters A, B, C etc. Table 7 (p. xxiv), contains the number of the reference in the bibliography to which the letters refer. The letter "P" in this column denotes throughout that the wave-length is predicted from the laboratory term values, which may be found in the references to analysis, Table 9 (p. xxvii).

The order of the letters represents roughly the estimated precision of the measures, but this must not be interpreted too literally because some investigators have measured only limited regions of a spectrum. Consequently, several accurate sources may be used within a multiplet. Furthermore, the letters A, B, etc. denote very different degrees of accuracy for different spectra. While the earlier letters of the alphabet are the more favored choices, it would be erroneous to conclude that the letters are arranged strictly according to the writer's rating of the accuracy of the measures.

33. Symbols in the R M T.

Since most of the symbols occur in column one, they will all be described here.

Wave-length column:

// This symbol follows the wave-length of the "Raie Ultime" as determined from observations in the laboratory. High transition probabilities as well as low energy levels are involved, and they do not always come from the lowest levels. When the known *Raies Ultimes* are to the violet of λ2950 they are not included in the R M T. With the exception of Eu II[1] they are all quoted from Meggers [2], who generously furnished the data on first spark spectra [3] in advance of publication.

* An asterisk precedes the wave-length throughout the R M T to denote a blend. If no symbol follows the wave-length, the line is blended with another line in the same spectrum. For example, the line *2970.106 appears in multiplets 10 and 11 of *Fe* I.

An "*" is also used to denote blended intensities. For symbols in the intensity column see § 34G.

§ This symbol follows the wave-length (an "*" always preceding) to indicate a blend of an arc and spark line; or of two spark lines of the same element in spectra of different degrees of ionization. When this pair of symbols appears with an arc line it denotes that the arc line is blended with a line in the first spark spectrum of the element. Similarly, if it appears with a line in a first spark spectrum, the spark line is blended with an arc line of that element. Examples:

Fe I Multiplet No. 28 *3116.633§—Blend of *Fe* I and *Fe* II.

Cr II Multiplet No. 4 *3349.34§—Blend of *Cr* II and *Cr* I.

All uses of pairs of symbols not covered by the general cases of blends of arc lines with those in the first spark spectra or vice-versa, as described above, are summarized in Table 4, where another pair of symbols "* and §§" is also introduced.

TABLE 4

SYMBOLS DENOTING BLENDS—SPECIAL CASES

Spectrum	* and §	* and §§
C II	.....	C II and C III
C III	.....	C III " C II
P II	P II and P III	P II " P IV
P III	P III " P II	P III " P IV
P IV	P IV " P III	P IV " P II
S II	S II " S III	
S III	S III " S II	
K III	K III " K II	
Fe II	.....	Fe II " Fe III
Fe III	Fe III " Fe II	Fe III " Fe I

Column one of Table 4 indicates the spectrum in which the symbols are found. Columns two and three of the Table contain the pairs of symbols used and the meaning of each. For example:

C II Multiplet No. 45 *4368.14§§—Blend of *C* II and *C* III.

S II Multiplet No. 50 *3860.64§—Blend of *S* II and *S* III.

The symbols mentioned above apply to blended lines which have come to the attention of the writer, but doubtless many more blends exist than are thus noted. A careful examination of the Finding List should reveal any important blends, but this list was prepared after the R M T was typed, and consequently could not be used to check the thoroughness with which the blended lines are marked.

m An "m" preceding the wave-length indicates that the line is masked (see § 34F).

† This symbol follows the Multiplet Designation to call attention to the fact that not all the lines observed in the multiplet are listed in the R M T. The violet limit λ2950 explains the omission of some strong lines. Most of the omitted lines are too faint to be of astrophysical importance.

[1] Russell, Unpublished material.
[2] Meggers, *Journ. Opt. Soc. Am.* **31**, 39 (No. 1), 1941.
[3] April 1941.

34. Intensity.

Column three contains the estimated laboratory intensity. It has been included only because of persistent requests. The intensities must be used with great caution not only because of the glaring lack of homogeneity in the estimates, but also on account of the difference in the intensity scales used by various investigators.

For each spectrum the writer has tried to adopt the best existing set of estimates made by a good observer who has covered a long range of wave-length. In the red, the intensities by Meggers and Kiess have been the first choice. In the visible, the arc intensities by A. S. King are given for arc spectra and for first spark spectra of the rare earths. For other spark spectra, spark intensities have been used.

When the intensities of the lines of a spectrum are taken from one or two main references they are not given in parentheses. If only a few intensities are from one source, or if the listed ones are probably on a very different scale from the majority used for a spectrum, parentheses are used. In general, the parentheses denote that the intensity is not the first or second choice. Table 8, Page xxvi, gives the references from which the intensities have been taken. The reader is warned not to assume that the wave-length and intensity come from the same reference. This may be the case, but frequently it is not.

The intensity column contains several types of notes discussed below under entries A to G:

A The letters used to describe the intensities are as follows:

d Double
g Ghost; g coin Ghost coincident; gn Ghost near
l Shaded to longer wave-length [1]
n Diffuse (without structure) or hazy
N Very diffuse (without structure) or very hazy
p Part of band
r Narrow self-reversal
R Wide self-reversal
s Shaded to shorter wave-length (noted by "v" or "ny" in some papers)[1]
tr Trace
w Wide (fine structure type), broad or complex
W Very wide (fine structure type) or very broad

B The intensity column is often blank for predicted lines because most of them have not been observed in the laboratory. If the predicted position is assumed to be more accurate than the measured one, the laboratory intensity is given with a predicted wave-length.

C A dash indicates that the line is so faint that no laboratory intensity has been assigned, except for *H*, *D* and *He* II, where no intensities are listed.

D "Forb" indicates that the line is forbidden but has been observed in the laboratory. Lines due to Stark Effect are thus marked.

E Familiar "names" of selected lines are included:

Series Names:

H	Hα, Hβ etc.
D	Dα, Dβ "

Fraunhofer Names:

He I	D_3
Na I	D_1 and D_2
Ca II	H and K

F When an important line is masked, "m" precedes the wave-length, the predicted position of the masked line is given, and the spectrum to which the masking line belongs, is noted by the chemical symbol in the intensity column. The Roman numerals have been omitted except for masked lines of *Fe* III. If for example "*Fe*" or "*Ti*" appears in the intensity column, the line in question is masked by *Fe* I or *Ti* I the "I" being omitted because of the limited space in this column. Similarly, a "+" is mostly used for first spark spectra in place of "II," although the conventional use of Roman numerals is fully recognized.

[1] Recommended by the International Astronomical Union—*Trans. Intern. Astr. Union* 6, 100, 1938.

G Symbols in the intensity column:

* Blended Intensity

⊙ Predicted line of *Fe* I present in the solar spectrum; ⊙? denotes that the solar identification as *Fe* I is subject to some question.

35. Columns four and five give the low and high excitation potentials (E P) of the levels involved in the production of the line (see § 27). Some E P's are given in parentheses in the R M T to denote that they are not accurately known.

In analyzing a spectrum it often happens that two or more sets of terms of different multiplicity exist that are unconnected, since no intersystem combinations have been detected. If long series, whose correctness is unquestionable, can be found, the limits furnish a fairly accurate determination of the relative positions of the different types of terms. This is the case for *Be* I, *B* II, *C* III, *O* III, and *O* IV, but no symbol has been introduced to indicate that intersystem combinations have not been observed.

The limits are less accurate for *N* II, *N* IV, *O* II, *O* V and *F* II. The E P's affected by this are in parentheses.

For *Ce* II, two sets of terms are well known but they are unconnected. For this reason the lines are listed in two Groups, I and II. Within each group the relative values of the E P's are correct, but the terms in Group I are believed to be lower than those in Group II by about 0.6 volt.[1] In Group II all values are, therefore, enclosed in parentheses.

For *Ce* III parentheses are used because the lowest level may not have been found.

For *Si* II, *P* III and *Mn* II some terms are established by their internal separations, but are entirely unconnected with the rest of the terms. Here the E P columns contain question marks.

In the earlier Multiplet Table all E P's were obtained by multiplying the term values in cm^{-1} by the factor 0.00012345. An improved value of this factor, 0.00012336, was published by Birge[2] in 1929. Since then he has announced that 0.00012395 is more nearly correct[3]. This last change deserves serious consideration—it involves a change in "e", the charge on the electron, which will doubtless be carefully checked experimentally in the near future. The change is surprisingly large and affects many calculations of an astrophysical nature.

Although it is wrong, in principle, to perpetuate the use of an incorrect value of a fundamental physical constant, the old value 0.00012345 has been used throughout the R M T in calculating the E P's (and I P's for which the limits were known. See § 23). The reason is threefold:

1. The errors in stellar temperatures and other quantities based on observational data far exceed those introduced by the change in this factor.

2. Until a definitive value of the constant is available it has seemed an unjustifiable expenditure of time and money to revise the extensive calculations, many of which had already been done with the oldest value.

3. The change in the value of "e" enters into so many calculations, that to recalculate the E P's and I P's is far from sufficient. As soon as the new value is confirmed without likelihood of further change, it should be used in *all* calculations of astrophysical importance.

The last two columns contain J-values and Multiplet Designations. These have already been discussed in § 28, but a few comments are in order. When levels of a term are so close that they are unresolved, all the J-values for the term should be listed. This is impossible because of limited space, and consequently the column headed J is frequently blank or has the J-value of only one level entered.

The multiplet numbers which appear in parentheses under the Multiplet Designation are reference numbers to be used in locating any line. (See §6). In each spectrum the numbers start with "1." All lines in a multiplet have the same multiplet number. These numbers are entered in the Finding List.

VII. SPECTROSCOPIC NOTATION

The notation used in the column headed "Multiplet Designation" differs for spectra which contain conspicuous series and for the complex spectra which do not.

A. *Series Spectra*

36. For many elements the spectra become more complex as the degree of ionization decreases. The terms of each spectrum are the parent terms or "limits" of the terms in the spectrum of the next lower degree of ionization. The addition of s, p, d, f, etc. electrons to each limit produces arrays of terms accurately predictable from theory.

---

[1] Harrison, Albertson and Hosford, *Journ. Opt. Soc. Am.* **31**, 439 (No. 6), 1941.
[2] *Phys. Rev. Suppl.* **1**, 62 (No. 1), 1929.
[3] *Rev. Mod. Phys.* **13**, 237 (No. 4), 1941; *Reports on Progress in Physics* **8**, 131, 1941.

The simplest case is illustrated by *O* VI. Here the lowest term of *O* VII, $1s^2\ {}^1S$, is so much lower than any other that no other limit need be considered. The addition of a "running" s, p, d, f . . . electron to this state produces series of doublet S, P°, D, F° . . . terms in *O* VI. In this case the electron and the terms are of the same type. For example, the ground term of *O* VI is $1s^22s\ {}^2S$, and the next term $1s^22p\ {}^2P°$. The term type and total quantum number of the running electron suffice to define the configuration. In the R M T the notation 2^2S, $2^2P°$ etc. is used in spectra of this type. To illustrate, Multiplet No. 1 of *Li* I has the designation $2^2S–2^2P°$. (Other features of the notation are discussed in §28 and in Table 3).

The case of *O* V is more complicated because $2^2P°$ of *O* VI is not much higher than 2^2S and terms from both limits are important. The addition of a running electron to these limits gives the following terms:

O VI	Limit	$1s^22s$	^2S		$1s^22p$	$^2P°$					
O V	Added Electron	Config	Terms		Config	Terms					
	3s	$1s^22s3s$	^1S	^3S	$1s^22p3s$	$^1P°$		,	$^3P°$		
	3p	$1s^22s3p$	$^1P°$	$^3P°$	$1s^22p3p$	^1S	^1P	^1D ,	^3S	^3P	^3D
	3d	$1s^22s3d$	^1D	^3D	$1s^22p3d$	$^1P°$	$^1D°$	$^1F°$,	$^3P°$	$^3D°$	$^3F°$

The configuration is $1s^22s^2$ gives only ^1S; and $1s^22p^2$ only $^1S\ {}^1D\ {}^3P$.

It appears from this array that if the terms having the limit 2^2S in *O* VI are labeled 3^1S, 3^3S, $3^1P°$, $3^3P°$, 3^1D, 3^3D, and those from $2^2P°$ are labeled $3s^1P°$, $3s^3P°$, $3p^1S$ . . . . $3d^1P°$ no ambiguity occurs. This notation has been adopted in the R M T for a number of spectra in which two limits, one odd and one even, had to be considered.

When two or more of the effective limits are all even or all odd an addition to this notation is necessary. For terms derived from the lowest of such a group of limits, the running electron is given as before; for those derived from the next higher limit a prime is affixed; and for those from the limit above this a double prime. Where the lowest limit is an S term, the type of the electron and of the term itself are the same, and the former is omitted. For example, the limiting terms in *O* II are $^4S°$, $^2D°$ and $^2P°$ in order. The addition of a 3p electron to these gives (among others) the terms in *O* I here called 3^5P from $^4S°$, $3p'\ {}^3D$ from $^2D°$ and $3p''\ {}^3D$ from $^2P°$.

In several spectra there remain terms which cannot be described by this scheme: but it has been found possible to give a special abbreviated form of the configuration notation, etc. which make their nature intelligible to one versed in the theory of spectral structure.

There is at present no general agreement regarding the use of abbreviated notation of this sort. The notation here adopted has been largely influenced by the limitations of the photographic process—and is not presented as an ideal system—but it illustrates the glaring need for the preparation and general adoption of a better one.

37. Special Cases.

The notation used in the R M T for *Ne* I, *Na* II, *A* I, *K* II and *Ca* III deserves special mention. Paschen's notation formerly used for spectra of this type defined the total quantum number and the type of electron, but introduced subscripts that were not inner quantum numbers. A revised notation which is given in detail by Bacher and Goudsmit [1] is adopted here. The levels with "s" electrons were called by Paschen s_2, s_3, s_4 and s_5; those with "p" electrons were p_1 to p_{10} etc. In this book the subscripts used by Paschen have been omitted but the rest of his notation is retained with numbers assigned to the levels, in order of increasing values for the lowest group of levels of each type. All the members of a series have the same number, but with this arrangement homologous levels which have the same J-values for different elements are not always assigned the same index number. *Ne* I illustrates the changes:

Ne I Notation

Paschen	Revised	Paschen	Revised
		.....	.....
$3s_5$	3s 1°	.....	.....
$3s_4$	3s 2°	$4d_6$	4d 1°
.....	.....	$4d_5$	4d 2°
$3p_{10}$	3p 1	$4d'_4$	4d 3°
$3p_9$	3p 2	$4d_4$	4d 4°
$3p_8$	3p 3	.....	.....

[1] Atomic Energy States, McGraw Hill, New York, London, 1932.

Most of the levels for spectra of this type are not grouped into terms and consequently multiplets in the ordinary sense cannot be listed. Arbitrary groups of lines have been formed and numbered to facilitate the search for a given line. In *Ne* I for example, all important lines from the level 3s 1° combining with "3p" levels have multiplet number 1; those from 3s 1° combining with 4p levels have multiplet number 2 etc.

B. Complex Spectra

38. In the majority of complex spectra the terms are so numerous that it is impracticable to designate them by their configurations. For these spectra the prefixes a, b, c, d are assigned to the low terms of each type and z, y, x etc. to those which combine with them. In *Fe* I, for example, the lowest ^{3}F term is a^{3}F, the next higher one b^{3}F etc. There are ten ^{3}G° terms. They are labeled z^{3}G°, y^{3}G° . . . . . q^{3}G°. In Multiplet No. 449 the designation is b^{3}G-t^{3}G°. Here the low term is the second ^{3}G term as indicated by the prefix "b". The high term is the seventh odd ^{3}G term, as indicated by "t".

39. In many complex spectra it is impossible to group all known levels into spectroscopic terms. These miscellaneous levels are assigned numbers, and the superscript "°" if they belong to the odd set. Many combinations between terms and miscellaneous levels are given in the R M T and assigned multiplet numbers. For example, the designation of multiplet number 450 of *Fe* I is b^{3}G–12°.

Numbered levels are numerous in spectra of the rare earths. The arrangement is similar to that described in § 27, i.e. the lines from a given low term are listed in order of increasing E P of the numbered levels.

In *Sm* II only the low levels have been grouped into terms. All high levels are numbered odd levels. In the R M T the combinations of the separate components of the low terms with arbitrarily grouped odd levels are assigned multiplet numbers. For example, the combinations of a^{8}F$_{1/2}$ with the levels labeled 1°, 2°, 5°, 23°, 35°, 37° have multiplet number 1. The E P's increase for the various groups similarly to those in spectra with regular terms, as discussed in §27.

VIII. SPECIAL NOTES ON INDIVIDUAL SPECTRA

40. *H*
D
He II

The wave-lengths listed for these spectra have been calculated for the center of gravity of the lines, taking into account the fine structure, and using the values of R_H, R_D and R_{He} respectively, given by Birge in 1941 [1]. These computations were made by Dr. J. E. Mack for inclusion here. The writer is deeply indebted to Dr. Mack for his cordial cooperation in furnishing this unpublished material.

No intensities have been included for these spectra.

O II Improved term values are needed. The writer has constructed the multiplets from Edlén's term list. Measures by different investigators are discordant, and considerable editing has been done, especially in the interpretation of blends.

For the sextet terms the configuration in abbreviated form is used to indicate that the terms are from the high limit sp^3 ^{5}S° in *O* III, namely: sp^{3}3p ^{6}P, sp^{3}3d ^{6}D°, sp^{3}4s ^{6}S°.

Na I The fine structure components of D_1 and D_2 have been measured with the interferometer by Meissner and Luft [2], as follows:

	D_1	D_2
	5895.9316	5889.9579
	5895.9103	5889.9380
Center of Gravity	5895.9236	5889.9504

The measures listed in the R M T are taken from a source where the lines appeared as impurities, since it was thought that for astrophysical purposes these measures might be preferable to those of the fine structure components.

The two lines λ11403 and λ11381 were also measured as impurities.

Improved laboratory intensities are needed for *Na* I.

[1] *Rev. Mod. Phys.* **13**, 233 (No. 4), 1941.
[2] *Ann. der Phys.* (5) **29**, 698, 1937.

Na II The changes made in the Paschen notation for *Na* II have been discussed in § 37. Some *terms* are also known in this spectrum, and two types of notation appear. The lines are listed in order of increasing low level and these *levels* combine with the *terms*. Although no complete multiplets are listed, multiplet numbers have been assigned as usual. For example, multiplet No. 17 is 3p 9–4s^{3}P°. In spectra of this type no attempt has been made to indicate omitted lines by the use of a "†". The "List D" indicates that only the leading lines are listed.

Mg I Two sets of series, 3^{1}D–^{1}F° and 3^{3}D–^{3}F° have been extended by the use of infra-red solar wave-lengths from Babcock's Table (see § 15)[1]. This has been done on the assumption that the ^{1}F° and ^{3}F° terms are coincident, as Paschen suggested for the first members of the series. The predicted wave-lengths in the R M T are obtained from solar term values. The series appear to be so well confirmed that the solar wave-lengths are preferable to the predicted ones, but for uniformity, no exception has been made for these series lines of *Mg* I.

In Multiplets 7, 8 and 9 the J-values and designation apply to all three lines entered. In each case singlet combinations are involved. Normally one one line is observed in a combination of this type, but the fine structure components of each line are listed.

Al II The G and H terms given by Paschen and Ritschl [2] are in both cases assumed to be coincident singlet and triplet terms. When combinations of these terms with singlet terms are listed in the R M T, ^{1}G or ^{1}H° has been used in place of ^{1,3}G or ^{1,3}H°. Similarly, the last three entries are given as singlet combinations, but in reality they are probably singlet and triplet combinations. Double multiplicities for unresolved terms have not been used in the R M T.

Si II Owing to the use of the photographic method of publication, it has been impossible to add lines without retyping one or more pages. One predicted multiplet of *Si* II has been omitted which should possibly have been inserted.

I A	Ref	E P Low	E P High	J	Multiplet Desig
4075.81	P	9.80	12.82	2½–1½	3^{2}D–5^{2}P°
4077.09	P	9.79	12.82	1½– ½	
4073.05	P	9.79	12.82	1½–1½	

P III The multiplets are listed slightly out of order, but it was thought unnecessary to retype the page on this account.

S II The measures by different observers are very discordant. This spectrum needs thorough observation. Accurate wave-lengths, intensity estimates and term values, and further analysis are desirable.

A II This spectrum is fairly well analyzed but needs careful editing before a definitive analysis can be published. Rosenthal[3] has measured many lines and from his measures alone a consistent set of term values could probably be calculated. The lists of classified lines are not homogeneous and a larger residual in the observed minus calculated wave number must be permitted than for most spectra. The multiplets listed in the R M T appear to be fairly satisfactory in spite of the inaccurate term values.

One term, labeled a^{2}P by de Bruin is puzzling because it has no configuration assignment. It has been retained, but needs to be checked carefully when the analysis is carried further. This is the only case where both the running electron notation and the prefix "a" appear in a given spectrum.

Ca I Although the analyses of these spectra are almost completed, the spectra require further laboratory
Ca II observation. Accurate wave-lengths, especially of the fainter lines are urgently needed. It is surprisingly difficult to obtain accordant term values. The interferometer measures made at Allegheny furnish an excellent starting point, but these spectra still invite the attention of the laboratory investigator, from the violet through the infra-red.

[1] Babcock and Moore, *Ap. J.* **101**, 374, 1945.
[2] *Ann. der Phys.* (5) **18**, 867, 1933.
[3] *Ann. der Phys.* (5) **4**, 49, 1930.

Sc II Multiplet No. 9. Enter intensity 2 for λ3923.503.

41. *Fe* I The rigorous arrangement of multiplets described in § 27 applies only approximately to *Fe* I. In this spectrum the multiplet numbers reach 1352 but this figure is not definitive. Owing to an extension of the analysis which altered some term assignments, a number of multiplets were rearranged after the lines and multiplet numbers had been entered and checked in the Finding List.

All the revisions were entered in the R M T. For unchanged multiplets the original multiplet numbers were retained. The revised multiplets were inserted as nearly as possible in the correct place and assigned the available numbers, or to avoid duplication, a number followed by "a". As a result of these changes the multiplets do not always have consecutive numbers and some numbers are omitted. The renumbering of all the multiplets entailed so many changes in the Finding List that it was not undertaken.

In three multiplets of *Fe* I, Nos. 3, 7 and 81, an "R" is entered under the multiplet number. A line has been inadvertently omitted from each of these multiplets. The omitted lines are listed on page 65 at the end of the *Fe* I multiplets, and preceding the list of unclassified lines.

In multiplet No. 78, columns one and two, λ3497.137 V should read 3497.15 P.

Multiplet No. 1151 should be rejected; λ4618.568 is erroneous.

Ni I Attention has been called to the fact that the intensities in Multiplet No. 62 are not so abnormal as indicated here. It has been impossible to insert revised estimates.

Rh II The use of the symbol "†" to denote omitted lines has not been checked owing to the lack of a complete line list. It has been assumed from the term lists that the fainter members of the multiplets thus marked have been observed.

Ce II The lack of connection between Groups I and II has been mentioned (§ 35). It is assumed that the terms in Group I are the lower set.

The prefixes a, b and c etc. have been assigned to the low set of terms of each Group. There can be no ambiguity because in Group I the low set is even, while in Group II it is odd.

W II All the miscellaneous levels published by Laun [1] have been numbered in order. These numbers are used in the R M T in place of Laun's notation.

IX. SPECTRA OMITTED FROM THE R M T.

These may be grouped in several general classes.

42. Spectra of probable astrophysical importance for which there is no analysis to date.

These spectra are mentioned in the R M T in the appropriate place with the remark "No Analysis" and the date. If A. S. King has assigned a Temperature Class to the lines, this fact is noted. For example: page 86, *Ce* I No Analysis May 1942 (Temperature Class). The spectra in this class are listed in Table 5.

Table 5

Spectra Omitted from R M T

No Analysis

Spectrum	Ref. to Temp. Class	Spectrum	Ref. to Temp. Class
Ce I	215	Dy I	217
Pr I	215	Dy II	217, 229
Nd I	219	Ho I	217
Tb I	217	Ho II	217
Tb II	217	Th I	123

All but *Th* I have been observed by A.S. King. The bibliography numbers of the references to the work on temperature classification are entered in column two.

[1] *Bur. St. Journ. Res.* **21**, 207 (RP 1125), 1938.

43. Analyzed spectra having lines observed in the visible region, but omitted from the R M T as unimportant astrophysically.

These spectra are mentioned in the R M T with the remark "See Introduction". They are listed in Table 6 with numbers from the bibliography referring to the papers on analysis.

TABLE 6

SPECTRA OMITTED FROM R M T

NOT OF ASTROPHYSICAL INTEREST

Spectrum	Ref. to Analysis	Spectrum	Ref. to Analysis	Spectrum	Ref. to Analysis
B I [1]	16, 89	Rb II	238	Cs II	309, 405
F IV	84	Pd II	384, 24	Ta II	192
F VI	83, 87	Ag II	383, 24	Pt II	387
Cl IV	31, 32	Cd II	372, 401	Au II	324
Ga II	376	In II	317	Hg II	313
Se II	244	Sb II	236	Tl II	106
Br I	194	I I	107, 69, 325	Pb II	80
Br II	232	I II	232	Bi II	64, 115
Kr I	274, 276, 165	Xe I	156	Rn I	329
Kr II	53	Xe II	155	Th III	54

The low abundance of these elements in celestial sources, and the high E P of the lines in the visible region have been the determining factors for omission.

44. There are three types of spectra for which little or nothing is known:

Er, *U*. Lines have been observed in spectra of these elements, but the spectra of various degrees of ionization have not been separated.

Te II, *Re* II, *Os* II, *Ir* II, *Po*, *Ac*, *Pa*. The writer has found no references to work on these spectra.

Ma, *Il*, 85, 87. There is nothing known about these elements. It appears doubtful whether they have been successfully isolated.

No reference is made in the body of the R M T to those spectra whose leading lines are in the region to the violet of λ2950, since this is a book designed for astrophysical use. Selected spectra of this type are included in the section dealing with Forbidden Lines (see § 45 and pp. 100–110).

X. FORBIDDEN LINES

45. The author of a "Multiplet Table of Astrophysical Interest" published in 1945 is obliged to consider the probable importance of the forbidden lines of *all abundant* elements. This is indicated by the work of Bowen on nebular lines, of Edlén on coronal lines, and of Swings, Merrill and others on various astronomical spectra.

Following the body of the R M T is a Table of Forbidden Lines of Astrophysical Interest (pp. 100–110). This Table is arranged in detail similarly to the R M T. The lines in a multiplet are listed by diagonals and the multiplets are listed in the order described in § 27. In order to avoid duplication, all multiplets of forbidden lines have an "F" following the multiplet number, 1F, 2F etc. Unlike the R M T, the headings for each spectrum contain only the name of spectrum and the I P. No grading of analysis or list has been attempted and no date of completion of the manuscript is given. All of this section has been written between January and May 1945.

In preparing this manuscript the writer has been most cordially assisted by Dr. Swings. He has edited the lists and offered many valuable suggestions concerning the limitations of the Table. No explicit statement can be made as to the principles of selection adopted, but severe restrictions have been necessary in complex spectra because of the great array of possible forbidden transitions. For simple spectra only a limited number of transitions occurs, but as the complexity increases the number increases rapidly. The general principles followed are:

A Only transitions from metastable states are forbidden. Consequently only the lowest terms in a spectrum are considered.

[1] Lines of B I have not been observed in the visible, but should exist.

B The lists are restricted to multiplets involving likely combinations as regards multiplicity and azimuthal quantum numbers, except for those in which the lowest terms are involved. In *Fe* II, for example, many more combinations and more unlikely combinations from the lowest term, a^6D are listed than from higher terms.

C Transitions involving $\Delta J = \pm 2$ as well as $\Delta J = 0$ or ± 1 are listed for the multiplets most likely to be important.

D The high E P is limited to about 4.0 for the most abundant elements and to about 3.5 for arc spectra of these elements.

E The lists have been extended to include lines that may be important in the red and infra-red. Forbidden lines of neutral atoms are included only for the most abundant elements.

The multiplets listed must be interpreted with caution, because of these restrictions. If complete multiplet arrays are written up from Table 3, lines omitted from any multiplet among the forbidden lines can be detected. Those interested in longer lists must construct them from the term lists given in the papers on the analysis of each spectrum (Table 10 p. xxix).

The great majority of forbidden lines are predicted from the term values. If accurate *measures* have been obtained, they are entered with a letter indicating the source, as follows:

N	Nebular	*N* II, *O* II, *O* III, *Ne* III, *Ne* V, *S* II
L	Laboratory	*O* I
A	Auroral	*O* I
C	Coronal	Entered under the predicted positions of lines of highly ionized *Fe* and *Ni*

When term values permit, the wave-lengths of predicted lines have been calculated to two decimal places. For some spectra the term values are not accurately known, but the internal separations are well established. For these the position is given to 0.1 A. For the most inaccurate wave-lengths no decimals are recorded and in very dubious cases a "?" follows the wave-length.

Some I P's and some predicted wave-lengths have been obtained by interpolation or extrapolation along the isoelectronic sequences. These are:

Term				I P	
Sp	Term	Sp	Term	Sp	Sp
Cl II	^1S	Ca VII	^1S	Ca V	Fe X
S XII	^2P	Ca XV	^3P	Sc VI	Fe XI
A III	^1S	Fe XV	$^3P^\circ$	V VIII	Fe XIII
A XI	^3P	Ni XII	$^2P^\circ$	Cr VIII	Fe XIV
A XIV	$^2P^\circ$	Ni XIII	^3P, ^1D	Cr IX	Fe XV
K V	$^2P^\circ$ $^2D^\circ$	Ni XV	^3P	Mn IX	Co XI
K VI	^1S	Ni XVI	$^2P^\circ$	Mn X	Ni XIII
					Ni XV

As in the body of the R M T, E P's in parentheses denote that the terms involved do not have observed connections with the rest of the terms of the spectrum.

Dr. Swings has pointed out that forbidden lines are essentially emission lines, and therefore, astrophysically the high E P is the important one. For this reason the multiplets of a spectrum should be listed by high E P rather than by low E P (§ 27). It is fully recognized that emission lines are better handled in this order and it is hoped that all multiplets having the same high term can be readily selected in any spectrum. The arrangement by low terms has been adopted merely for the sake of uniformity.

Another highly significant comment has been made by Dr. Swings [1], namely, that "certain forbidden transitions that are not directly observable may play a role in astronomy, for example, by flourescence excitation, ionization or dissociation."

[1] Letter, May 1945.

The importance of lines in the extreme violet such as λ303.7 of *He* II, λ303.7 and λ374.4 of *O* III and the pair at λ374.4 of *N* III, in producing the nebular lines has been fully discussed by Bowen [1]. The violet limit, λ2950, imposed in this book has excluded both permitted and forbidden lines in the violet that are extremely important in the interpretation of forbidden lines observed in astronomical spectra. Readers are, therefore, urged to consult the individual papers on this subject, as it has been regarded as beyond the scope of the present work.

XI DETAILS OF PUBLICATION

The preparation of the manuscript of this book has covered such a long period of time that the typing has been done as various spectra were finished, which is not in the order of increasing atomic number. It has been practically impossible to terminate every section of the manuscript at the end of a typed page. Some important insertions have also broken the continuity of typing. Consequently, the pages are frequently unequal in length and some have large gaps. No serious effort has been made to avoid irregularities of this kind, for two reasons: first, the retyping and rechecking of these large pages in order to adjust spacing has seemed an unjustifiable procedure, particularly since there is always the chance of introducing new errors in handling so much tabular data; second, the blank spaces may prove to be useful for notes.

Doubtless there are more serious irregularities, namely inconsistencies in notation of similar spectra. During the course of the work the manuscript has been widely distributed to interested investigators. To date it has never all been assembled in one place. The writer has been unable to remember all the details connected with each spectrum, but has proceeded on the assumption that minor irregularities would not impair the value of the R M T so seriously as the delays required to correct all of them.

46. One of the purposes of this book has been to provide adequate material for fairly definitive identifications of solar lines. Mention has been made of the forthcoming publication by Babcock and others on the Infra-Red Solar Spectrum λλ6600–13495 (§§ 7, 15). A similar program covering the violet solar spectrum is being carried on at Mount Wilson by Babcock. The writer has been working on the identifications of the solar lines throughout the entire solar spectrum, with the aid of the manuscript of the R M T. The publication of the results to the violet of λ6600 has been postponed in order to complete the present book. It is planned to publish them as soon as possible.

XII. BIBLIOGRAPHY

Following the text is a Bibliography in which all references used in the preparation of this book are listed in the alphabetical order of the names of the authors. Each reference is assigned a number for purposes of cross reference.

47. In the R M T (excluding the section on Forbidden Lines) each spectrum has three sets of references: one giving the sources from which the wave-lengths have been taken—Table 7; one giving the first, second, etc. choices of references for intensity estimates—Table 8; and one referring to papers on analysis—Table 9.

The Tables are arranged similarly. In each, the first column gives the chemical symbol of the element and the spectrum (I = arc, II first spark etc.), the second the number with which to enter the Bibliography. In Table 7 the letters A, B, C, etc. are taken from column 2 of the R M T for each spectrum. In Table 8 the first choice for intensity is indicated in column one, the second in column two etc. In general, reference numbers are in italics when the intensities from the reference are in parentheses in the R M T (see § 34). Table 9 does not list choices. It contains references to papers on analysis that were used in compiling the R M T.

Table 10 gives the sources used for analysis of spectra contained in the Table of Forbidden Lines. It is arranged similarly to Table 9.

Following the Bibliography are an index by pages, and one by elements arranged in the alphabetical order of the chemical symbols.

[1] *Ap. J.* **81**, 1, 1935.

Table 7

References—Wave-Length

Sp	A	B	C	D	E	F
H	243					
D	243					
He I	263	299	319	174	275	
He II	243					
Li I	206	175	149			
Li II	378	404				
Be I	318	315	149			
Be II	318					
B II	81					
B III	81					
C I	185	300	169	160	370	
C II	122	81	89			
C III	81	121				
C IV	81					
N I	93	78	160	370		
N II	20	125	120			
N III	124	81				
N IV	126	81				
O I	98	263	127	116	316	128
O II	20	118	301			
O III	119	86	302			
O IV	81	126	86			
O V	81					
O VI	81					
F I	88					
F II	73					
F III	72	85				
Ne I	162	277	154	276	311	263
Ne II	52					
Na I	149	116	263	298	259	338
Na II	130	393				
Mg I	295	314	141	261	116	
Mg II	116					
Al I	403	315	116	319	310	
Al II	319	377				
Al III	312					
Si I	186					
Si II	117					
Si III	117					
Si IV	117	101				
P I	180					
P II	133	181	70			
P III	133					
P IV	133					
P V	133					
S I	297	129				
S II	157	19	158	25	136	
S III	157	159				
S IV	303					
Cl I	182					

Sp	A	B	C	D	E	F	G	H	I	J	K	L
Cl II	195											
Cl III	31	27										
A I	277	154	263									
A II	340	18	48	47								
A III	49	51										
A IV	50											
K I	149	403	263	259	88	116	108	380				
K II	46											
K III	47a	51a										
Ca I	403	66	259	369	373	241	374					
Ca II	168	403	66	375	390							
Ca III	11											
Sc I	245	253	349									
Sc II	245	253										
Sc III	172											
Ti I	178	65	185	282	245	201	212	348	199	172	177	21
Ti II	178	65	245	201	347	172						
Ti IV	364											
V I	264	368	245	242	266	213	109					
V II	266											
Cr I	183	184	245	142	{204 / 213}	173						
Cr II	184	245	142	110								
Mn I	260	245	246	131								
Mn II	{67 / 68}	245	108									
Fe I *												
Fe II	76	222	55									
Fe III	103	102	222									
Co I	56	282	245	280	71	230	62	147				
Co II	255											
Ni I	282	245	178	143	109	146	280	398				
Ni II	252	245	111									
Cu I	58											
Cu II	137											
Zn I	149											
Zn II	149	319										
Ga I	402											
Ge I	188	245										
Ge II	188	235										
As I	273											
As II	328											
Se I	189											
Rb I	149	333										
Sr I	399	245	116									
Sr II	399											
Y I	254	245										
Y II	254	351	245									
Zr I	197	282										
Zr II	196											
Cb I	283											
Cb II	283											

* See references for Fe I at end of Table 7.

TABLE 7—Continued

REFERENCES—WAVE-LENGTH

Sp	A	B	C	D	E
Mo I	326	176	113		
Mo II	245	113			
Ru I	245				
Ru II	272				
Rh I	304				
Rh II	150				
Pd I	256	109			
Ag I	149				
Cd I	149	163			
In I	402				
Sn I	265				
Sn II	248				
Sb I	279				
Te I	189				
Cs I	259	149			
Ba I	400				
Ba II	400	245	259	330	
La I	258				
La II	258				
La III	258				

Sp	A	B	C	D	E
Ce II	144	9	245		
Ce III	362				
Pr II	339	245			
Nd II	10	245	219		
Sm I	{221, 4}	{221, 2}			
Sm II	221				
Eu I	223				
Eu II	223				
Gd I	225				
Gd II	225				
Tm I	268				
Tm II	269	{268, 224}			
Yb I	291				
Yb II	291				
Lu I	288				
Lu II	288				
Hf I	287				
Hf II	289				

Sp	A	B	C	D	E
Ta I	200				
W I	22				
W II	239				
Re I	257				
Os I	245				
Ir I	6				
Pt I	109				
Au I	324				
Hg I	396	166			
Tl I	307	109			
Pb I	149	135			
Bi I	214	17			
Ra I	332				
Ra II	331				
Th II	250				

Sp	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Q	R	S	T	U	V	W	X	Y
Fe I	164	161	278	185	262	282	59	167	14	371	57	281	220	{139, 138}†	280	15	227	77	391	247	55	171	379	†74

† These references have been used for lines to the violet of the range covered in the RMT, but are included for completeness.

Table 8

References—Intensity

Sp	Reference Numbers	Sp	Reference Numbers	Sp	Reference Numbers
He I	263 275 *174 116 319*	A II	340	Ru II	272
Li I	113 *175*	A III	49 51	Rh I	105
Li II	378 404	A IV	50	Rh II	150
Be I	315 318	K I	259 116 *88 108*	Pd I	256
Be II	318	K II	410 *46*	Ag I	389
B II	81	K III	47a 51a	Cd I	173
B III	81	Ca I	207 259 *369 241 374*	In I	402
C I	185 300 169 *160 370*	Ca II	259 207 *375 390 66*	Sn I	265
C II	81 *122*	Ca III	11	Sn II	248
C III	81	Sc I	210 *253 349 367*	Sb I	279
C IV	81	Sc II	253 *365*	Te I	189
N I	93 78 *160* 370	Sc III	*172*	Cs I	259 *245*
N II	20 125 120	Ti I	185 282 212 203 *348 199 172*	Ba I	207 *259*
N III	124 81	Ti II	347	Ba II	207 *259 330*
N IV	81	Ti IV	364	La I	228 *258*
O I	98 263 127 *116 128*	V I	264 213 204	La II	258
O II	20 118 301	V II	266	La III	258
O III	119 86 *302*	Cr I	183 184 *204 213*	Ce II	215 *144 9 245*
O IV	81 *126*	Cr II	184	Ce III	362
O V	81	Mn I	260 209 *131 61 113*	Pr II	215 *339*
O VI	81	Mn II	67 68 *108*	Nd II	219 *10*
F I	88	Fe I	185 282 220 211 202 227 *59 57*	Sm I	221
F II	73		*281 280 55 15 77 391 171 74*	Sm II	221
F III	72 85	Fe II	76 222 *55*	Eu I	223
Ne I	263 276 *311*	Fe III	103 102	Eu II	223
Ne II	52	Co I	205 208 282 *280 71 56 230 62 147*	Gd I	225
Na I	259 *172 116*	Co II	255	Gd II	225
Na II	130 393	Ni I	208 205 282 *143 109 146 280 398 245*	Tm I	268
Mg I	261 207 *295 314 170*	Ni II	252 382	Tm II	269 268 224
Mg II	116	Cu I	58	Yb I	291
Al I	315 116 319 *310*	Cu II	137	Yb II	291
Al II	319 377	Zn I	149	Lu I	288
Al III	312	Zn II	372	Lu II	288
Si I	186	Ga I	402 174	Hf I	216
Si II	117	Ge I	188 *132*	Hf II	289
Si III	117	Ge II	188 *235*	Ta I	200
Si IV	117 101	As I	273	W I	218 *22*
P I	180	As II	328	W II	239
P II	133 *181*	Se I	189	Re I	257
P III	133	Rb I	172	Os I	245
P IV	133	Sr I	207 259	Ir I	6
P V	133	Sr II	207 259	Pt I	109
S I	297 *129*	Y I	228	Au I	324
S II	25 19 *136*	Y II	254 *351*	Hg I	112 108
S III	157 *159*	Zr I	228 282 *197*	Tl I	109
S IV	303	Zr II	196	Pb I	109 *271*
Cl I	182	Cb I	283	Bi I	308 *17*
Cl II	195	Cb II	283	Ra I	332
Cl III	31 27	Mo I	326 176 *113*	Ra II	331
A I	263 276 *293 294*	Mo II	113	Th II	226
		Ru I	251 *109*		

Table 9

References—Analysis

Sp	Reference Numbers	Sp	Reference Numbers
H	243 23 116	S II	157 19 158 25 136
D	243 23	S III	157 159 136 337
He I	16 45 319 263 275 134	S IV	303 27 29
He II	243 23	Cl I	182 193 92
Li I	116 16 206	Cl II	195 96
Li II	16 81	Cl III	31 27
Be I	318 315	Cl IV	31 32
Be II	318	A I	154 276 42 16 293 294
B I	16 89	A II	92 42 48 47
B II	81 89	A III	49 51 42 44 96
B III	81	A IV	42 50
C I	81 300	K I	116 88
C II	81 89	K II	46 28 105
C III	81 89 82	K III	47a 92
C IV	81 82	Ca I	373 369 259 116
N I	104 78 160	Ca II	375 346 390
N II	89 81 125 120	Ca III	28 16
N III	89 81	Sc I	365
N IV	89 81 82	Sc II	365 285
N V	81 82	Sc III	364 392
O I	98	Ti I	348 355 282 185 178
O II	86 81 350 118	Ti II	347
O III	95 81 119 86 302	Ti IV	364
O IV	81 82	V I	286 305
O V	81 82	V II	284
O VI	81 82	Cr I	179 183 187 346
F I	88	Cr II	184
F II	85 73	Mn I	61 79 260 346
F III	85 30 72	Mn II	67 68
F IV	84	Fe I	363a
F VI	83 87	Fe II	75 76 94 139
Ne I	154 41 276 16 311	Fe III	103 102
Ne II	41 52	Co I	363
Na I	298 338 116	Co II	114
Na II	130 393 16	Ni I	352
Mg I	295 296 314 345	Ni II	382 233
Mg II	116 16	Cu I	381
Al I	315 319	Cu II	386
Al II	319 377	Zn I	149 116
Al III	312 16	Zn II	319 372
Si I	186	Ga I	116
Si II	117 29 16	Ga II	376
Si III	117 29	Ge I	188 327
Si IV	117 101	Ge II	188 234
P I	180 335	As I	273
P II	26 335 336	As II	140 328
P III	29 303 336	Se I	343
P IV	29 336	Se II	244
P V	336 40	Br I	194
S I	297 342	Br II	232

TABLE 9—Continued

REFERENCES—ANALYSIS

Sp	Reference Numbers	Sp	Reference Numbers
Kr I	274 276 165	Gd I	2 357 358
Kr II	53	Gd II	8 358
Rb I	116	Tm I	270
Rb II	238	Tm II	270 269
Sr I	116 369 399	Yb I	291 359
Sr II	116 259 399	Yb II	291 359
Y I	285	Lu I	288 267
Y II	285	Lu II	288
Zr I	197 282	Hf I	287
Zr II	196	Hf II	289
Cb I	290	Ta I	192
Cb II	290	Ta II	192
Mo I	63 191	W I	237
Mo II	190	W II	239
Ru I	394 145	Re I	257
Ru II	272 292	Os I	1 5
Rh I	395 304	Ir I	6
Rh II	150	Pt I	240 148
Pd I	385	Pt II	387
Pd II	384 24	Au I	324 306
Ag I	388	Au II	324
Ag II	383 24	Hg I	16
Cd I	116 16	Hg II	313
Cd II	372 401	Tl I	116
In I	116	Tl II	106
In II	317	Pb I	16
Sn I	265	Pb II	80
Sn II	248	Bi I	16
Sb I	279	Bi II	64 115
Sb II	236	Rn I	329
Te I	341	Ra I	332 354
I I	107 69 325	Ra II	331
I II	232	Th II	249 250
Xe I	156	Th III	54
Xe II	155		
Cs I	116		
Cs II	309 405		
Ba I	400 344 353		
Ba II	330 400		
La I	366		
La II	366		
La III	366		
Ce II	144 7 9		
Ce III	362		
Pr II	339 356		
Nd II	10		
Sm I	2 4		
Sm II	3		
Eu I	361		
Eu II	360		

Table 10

References—Forbidden Lines

Sp	Reference Numbers	Sp	Reference Numbers	Sp	Reference Numbers
Be I	318 315	Ca VI	33	Fe XIV	97
C I	81	Ca VII	337	Fe XV	90
N I	104	Ca XII	97	Co II	114
N II	81 43 409	Ca XIII	97	Co VI	37
O I	98 13 151	Ca XV	97	Co VII	12
O II	81 409	Sc II	365	Co VIII	60
O III	81 409	Sc III	364	Co XI	92
F II	85	Sc VI	91 231	Ni I	352
F III	85	Sc VII	231	Ni II	382 233
F IV	84	Ti I	348	Ni VII	322
Ne III	41 43 409	Ti II	347	Ni VIII	12
Ne IV	320	Ti III	364	Ni IX	60
Ne V	100 320 35 397	Ti VII	231 91	Ni XII	97
Na IV	393	Ti VIII	231	Ni XIII	97
Na V	393	V II	284	Ni XV	97
Mg VI	393	V III	407	Ni XVI	97
Al VII	393	V IV	406	Cu II	386
Si I	186	V VIII	91	Kr III	152
P I	180 335	Cr I	179 183 187	Sr II	116 259 399
P II	26 335 336	Cr II	184	Y II	285
S I	96 342 33	Cr III	36	Y V	321
S II	157 19 158 25 136 409	Cr IV	36 38	Zr II	196
S III	157 159 136 337	Cr V	406	Zr III	198
S VIII	97 337	Cr VIII	92	Zr VI	321
S XII	97	Cr IX	91	Xe II	155
Cl II	96 195	Mn II	67 68	Xe III	99 153
Cl III	31 27	Mn IV	36	La II	366
Cl IV	31 32	Mn V	34 38	La III	366
A III	96	Mn VI	60	Eu II	360
A IV	42 50	Mn IX	92		
A V	323 334	Mn X	91		
A X	97	Fe I	363a		
A XI	97	Fe II	75 76 94 139		
A XIV	97	Fe III	103 102		
K IV	96 33	Fe V	36		
K V	33	Fe VI	34 38		
K VI	337 408 334	Fe VII	39		
Ca I	373 369 259 116	Fe X	92 97		
Ca II	375	Fe XI	91 97		
Ca V	96 33 91	Fe XIII	97		

XIII. ACKNOWLEDGMENTS

This book is the result of an enormous amount of cooperation for which the writer cannot express adequate appreciation. She is extremely grateful to all who have generously furnished material, offered valuable suggestions, and assisted in many other ways.

In spite of war conditions both M. A. Catalán of Madrid and B. Edlén of Lund have been active collaborators. At home, physicists, astronomers, librarians and many others have likewise contributed. To each of these the writer extends most hearty thanks.

At the Mount Wilson Observatory, W. S. Adams has willingly assembled interested members of his staff for consultation concerning the form, content and scope of the book. H. D. Babcock's unpublished solar material has been of inestimable value. A. S. King has obligingly settled many puzzling questions about intensities. P. W. Merrill has urged the publication of the book from the start and supported the work enthusiastically. A. H. Joy has furnished detailed material on stellar spectra observed at Mount Wilson.

The writer has also been in constant communication with the Bureau of Standards. W. F. Meggers and C. C. Kiess have furnished more material on analysis in advance of publication than any other contributors. Special mention should be made of the valuable work on *Cr* I and *Cr* II by Kiess. The multiplet lists of these spectra have already been in constant demand. Many intricate details have been referred to Meggers. His continued interest and work on behalf of this book will not be forgotten.

In addition to the help with the forbidden lines, P. Swings together with O. Struve at the Yerkes Observatory have given most helpful assistance in the handling of the spectra of light elements from an astrophysical point of view.

Mention has already been made of the computations generously furnished by J. E. Mack.

The writer has been privileged to use the facilities of various institutions not directly connected with this program. At Wesleyan University the late Professor Slocum welcomed her most cordially to the Van Vleck Observatory. W. G. Cady, Chairman of the Department of Physics, was equally generous. Without the library privileges extended by these friends, the program would have been seriously impaired.

A welcome no less cordial has been extended in Cambridge, Massachusetts. J. C. Boyce, Harlow Shapley and Mrs. C. P. Gaposchkin have taken a most personal interest in the work. It has also been an enormous advantage to have free access to the libraries at the Cruft Laboratory, at the Massachusetts Institute of Technology and at the Harvard Observatory.

At Princeton this research program has been most enthusiastically supported by Henry Norris Russell over the long period of years since the publication of the first edition in 1933. The writer has had the great benefit of his wide experience in analyzing spectra, of his detailed knowledge of spectra and above all of his keen interest—all of which are recorded in the pages of the book itself. She expresses to him her gratitude with the hope that the readers will find the R M T worthy of all he has contributed to it.

Miss Margaret C. Shields of Fine Hall library in Princeton has cooperated so extensively that it is inadequate to express the personal gratitude of the writer in a single sentence. The same is true of Mrs. Jay Murray who has patiently and efficiently brought to a successful conclusion the appalling task of typing the Multiplet Table for photographic reproduction. Her painstaking care and skill are largely responsible for the completion of the work at this time.

Miss Marion Daly at Princeton and Miss Ada Spaterna of Washington, D. C., have spared no effort in typing the Finding List carefully and accurately.

The personal interest and help of President John A. Eckert of the Columbia Planograph Company have been one of the greatest sources of encouragement in completing the manuscript for publication.

In conclusion the writer wishes to record her appreciation of the cordial cooperation of her husband, Bancroft W. Sitterly.

BIBLIOGRAPHY

1 Albertson, Phys. Rev. (2) 45, 304, 1934.
2 Albertson, Phys. Rev. (2) 47, 370, 1935.
3 Albertson, Mt. Wilson Contr. No. 546; Ap. J. 84, 36, 1936.
4 Albertson, Phys. Rev. (2) 52, 644, 1937.
5 Albertson, Phys. Rev. (2) 53, 940, 1938.
6 Albertson, Phys. Rev. (2) 54, 183, 1938.
7 Albertson, Unpublished material, Nov. 1941.
8 Albertson, Bruynes and Hanau, Phys. Rev. (2) 57, 292, 1940.
9 Albertson and Harrison, Phys. Rev. (2) 52, 1209, 1937.
10 Albertson, Harrison and McNally, Jr., Phys. Rev. (2) 61, 167, 1942.
11 Anderson, J. A., Ap. J. 59, 76, 1924.
12 Anderson, E. E. and Mack, Phys. Rev. (2) 59, 717, 1941.
13 Babcock, Mt. Wilson Contr. No. 259; Ap. J. 57, 209, 1923.
14 Babcock, Mt. Wilson Contr. No. 343; Ap. J. 66, 256, 1927.
15 Babcock, Unpublished material.
16 See Bacher and Goudsmit, Atomic Energy States, McGraw-Hill, N. Y. and London, 1932.
17 Back und Goudsmit, Zeit. f. Phys. 47, 174, 1928.
18 Baly, de Bruin, Bloch, L., Bloch, E., meas. quoted by Rosenthal, Ann. der Phys. (5) 4, 49, 1930.
19 Bartelt und Eckstein, Zeit. f. Phys. 86, 77, 1933.
20 Beals, Publ. Dom. Ap. Obs. 6, 17, 1931.
21 Behner, Zeit. f. Wiss. Ptg. 33, 325, 1925.
22 Belke, Zeit. f. Wiss. Ptg. 17, 132 and 145, 1918.
23 Birge, Rev. Mod. Phys. 13, 233 (No. 4), 1941.
24 Blair, Phys. Rev. (2) 36, 173, 1930.
25 Bloch, L. et Bloch, E., Annales de Physique (10) 12, 5, 1929.
26 Bowen, Phys. Rev. (2) 29, 510, 1927.
27 Bowen, Phys. Rev. (2) 31, 34, 1928.
28 Bowen, Phys. Rev. (2) 31, 497, 1928.
29 Bowen, Phys. Rev. (2) 39, 8, 1932.
30 Bowen, Phys. Rev. (2) 45, 82, 1934.
31 Bowen, Phys. Rev. (2) 45, 401, 1934.
32 Bowen, Phys. Rev. (2) 46, 377, 1934.
33 Bowen, Phys. Rev. (2) 46, 791, 1934.
34 Bowen, Phys. Rev. (2) 47, 924, 1935.
35 Bowen, Rev. Mod. Phys. 8, 55 (No. 2), 1936.
36 Bowen, Phys. Rev. (2) 52, 1153, 1937.
37 Bowen, Phys. Rev. (2) 53, 889, 1938.
38 Bowen, see Pasternack, Ap. J. 92, 140, 1940.
39 Bowen and Edlén, Nature 143, 374, 1939.
40 Bowen and Millikan, Phys. Rev. (2) 25, 295, 1925.
41 Boyce, Phys. Rev. (2) 46, 378, 1934.
42 Boyce, Phys. Rev. (2) 48, 396, 1935.
43 Boyce, Mon. Not. Royal Astr. Soc. 96, 690 (No. 7), 1936.
44 Boyce, Phys. Rev. (2) 49, 351, 1936.
45 Boyce and Robinson, Journ. Opt. Soc. Am. 26, 143, 1936.
46 de Bruin, Zeit. f. Phys. 38, 94, 1926.
47 de Bruin, Zeit. f. Phys. 51, 108, 1928.
47a de Bruin, Zeit. f. Phys. 53, 658, 1929.
48 de Bruin, Zeit. f. Phys. 61, 307, 1930.
49 de Bruin, Proc. Amsterdam Acad. 36, 724 (No. 7), 1933.
50 de Bruin, Physica 3, 809 (No. 8), 1936.
51 de Bruin, Proc. Amsterdam Acad. 40, 340 (No. 4), 1937.
51a de Bruin, see Edlén, Zeit. f. Phys. 104, 407, 1937.
52 de Bruin und Bakker, Zeit. f. Phys. 69, 19, 1931.
53 de Bruin, Humphreys and Meggers, Bur. St. Journ. Res. 11, 409 (RP 599) 1933.
54 de Bruin, Klinkenberg und Schuurmans, Zeit. f. Phys. 118, 58, 1941.
55 Burns, Lick Bull. 8, 37 (No. 247), 1913.
56 Burns, Unpublished material. For interferometer meas. see Ref. No. 363.
57 Burns and Walters, Jr., Publ. Allegheny Obs. 6, 159 (No. 11), 1929.
58 Burns and Walters, Jr., Publ. Allegheny Obs 8, 27 (No. 3), 1930.
59 Burns and Walters, Jr., Publ. Allegheny Obs. 8, 39 (No. 4), 1931.
60 Cady, Willoughby, Phys. Rev. (2) 43, 322, 1933.
61 Catalán, Phil. Trans. Royal Soc. A 223, 127, 1922.
62 Catalán y Antunes, Ann. de la Soc. Esp. de Física y Química 34, 207, 1936 (Some measures by Exner and Haschek included here)
63 Catalán y Madariaga, Ann. de la Soc. Esp. de Física y Química 31, 707, 1933
64 Crawford and McLay, Proc. Royal Soc. A 143, 540, 1934.
65 Crew, Ap. J. 60, 108, 1924.
66 Crew and McCauley, Ap. J. 39, 29, 1914.
67 Curtis, Phys. Rev. (2) 53, 474, 1938.
68 Curtis, Unpublished material, July 1941.
69 Deb, Proc. Royal Soc. A 139, 380, 1933.
70 Déjardin, Canadian Journ. Res. 7, 556, 1932.
71 Dhein, Zeit. f. Wiss. Ptg. 19, 289, 1920.
72 Dingle, Proc. Royal Soc. A 122, 144, 1929.
73 Dingle, Proc. Royal Soc. A 128, 600, 1930.
74 Dingle, Mon. Not. Royal Astr. Soc. 94, 866, 1934.
75 Dobbie, Phys. Rev. (2) 45, 76, 1934.
76 Dobbie, Ann. Solar Phys. Obs. 5, 1 (Part I), 1938.
77 Dobbie, Unpublished material.
78 Duffendack and Wolfe, Phys. Rev. (2) 34, 409, 1929.
79 Dunham, T. Jr., Unpublished material, 1926.
80 Earls and Sawyer, Phys. Rev. (2) 47, 115, 1935.
81 Edlen, Nova Acta Regiae Societatis Scientiarum Upsaliensis, Ser. IV, 9 (No. 6), 1933.
82 Edlén, Zeit. f. Ap. 7, 378, 1933.
83 Edlén, Zeit. f. Phys. 89, 179, 1934.
84 Edlén, Zeit. f. Phys. 92, 19, 1934.
85 Edlén, Zeit. f. Phys. 93, 433, 1935.
86 Edlén, Zeit. f. Phys. 93, 726, 1935.
87 Edlén, Zeit. f. Phys. 94, 47, 1935.
88 Edlén, Zeit. f. Phys. 98, 445, 1936.
89 Edlén, Zeit. f. Phys. 98, 561, 1936.
90 Edlén, Zeit. f. Phys. 103, 536, 1936.
91 Edlén, Zeit. f. Phys. 104, 188, 1937.
92 Edlén, Zeit. f. Phys. 104, 407, 1937.
93 Edlén, Festskrift Tillägnad, Östen Bergstrand p. 135, 1938.
94 Edlén, Unpublished material, Feb. 1940.
95 Edlén, Naturwiss. 30, 279, 1942.
96 Edlén, Phys. Rev. (2) 62, 434, 1942.
97 Edlén, Zeit. f. Ap. 22, 30, 1942; see Swings, Ap. J. 98, 116, 1943.
98 Edlén, Kungl. Svenska Vetenskapsakademiens Handlingar, Tredje Serien, 20 (No. 10), 1943.
99 Edlen, Phys. Rev. (2) 65, 248, 1944.
100 Edlén, Unpublished material.
101 Edlén und Söderqvist, Zeit. f. Phys. 87, 217, 1933.
102 Edlén and Swings, Unpublished material, Dec. 1941.
103 Edlén and Swings, Contr. McDonald Obs. No. 49; Ap. J. 95, 532, 1942.
104 Ekefors, Zeit. f. Phys. 63, 437, 1930.
105 Ekefors, Zeit. f. Phys. 71, 53, 1931.
106 Ellis and Sawyer, Phys. Rev. (2) 49, 145, 1936.
107 Evans, Proc. Royal Soc. A 133, 417, 1931.
108 Exner und Haschek, see Kayser, Handbuch der Sp. 5, 1910.
109 Exner und Haschek, see Kayser, Handbuch der Sp. 6, 1912.

BIBLIOGRAPHY

110 Exner und Haschek, ses Kayser und Konen, Handbuch der Sp. 7, Part 1, 1924.

111 Exner and Haschek, see Shenstone, Phys. Rev. (2) 30, 255, 1927.

112 Exner und Haschek, ses Kayser und Konen, Handbuch der Sp. 7, Part 2, 1930.

113 Exner und Haschek, see Kayser und Konen, Handbuch der Sp. 7, Part 3, 1934.

114 Findlay, Phys. Rev. (2) 36, 5, 1930.

115 Fisher and Goudsmit, Phys. Rev. (2) 37, 1057, 1931.

116 See Fowler, Report on Series in Line Spectra, Fleetway Press, London, 1922.

117 Fowler, Phil. Trans. Royal Soc. A 225, 1, 1925.

118 Fowler, Proc. Royal Soc. A 110, 476, 1926.

119 Fowler, Proc. Royal Soc. A 117, 317, 1928.

120 Fowler and Freeman, Proc. Royal Soc. A 114, 662, 1927.

121 Fowler and Selwyn, Proc. Royal Soc. A 120, 312, 1928.

122 See Fowler and Selwyn, Proc. Royal Soc. A 120, 312, 1928.

123 Fred, Ap. J. 87, 176, 1938.

124 Freeman, Proc. Royal Soc. A 121, 318, 1928.

125 Freeman, Proc. Royal Soc. A 124, 654, 1929.

126 See Freeman, Proc. Royal Soc. A 127, 330, 1930.

127 Frerichs, Phys. Rev. (2) 34, 1239, 1929.

128 Frerichs, Naturwiss. 21, 849, 1933.

129 Frerichs, Zeit. f. Phys. 80, 150, 1933.

130 Frisch, Zeit. f. Phys. 70, 498, 1931.

131 Fuchs, see Kayser und Konen, Handbuch der Sp. 7, Part 3, 1934.

132 Gartlein, Phys. Rev. (2) 31, 782, 1928.

133 Geuter, Zeit. f. Wiss. Ptg. 5, 1, 1907. (See Kayser, Handbuch der Sp. 6, 1912.)

134 Gibbs and Kruger, Phys. Rev. (2) 37, 1559, 1931.

135 Gieseler und Grotrian, Zeit. f. Phys. 34, 374, 1925.

136 Gilles, Annales de Physique (10) 15, 267, 1931.

137 Green, L.C., See Shenstone, Phil. Trans. Royal Soc. A 235, 195 (No. 751), 1936.

138 Green, L.C., Unpublished material, 1937.

139 Green, L.C., Phys. Rev. (2) 55, 1209, 1939.

140 Green, J.B. and Barrows, Jr., Phys. Rev. (2) 47, 131, 1935.

141 Gremmer, see Paschen, Sitz. der Preuss. Akad. der Wiss., Phys.-Math. Klasse 32, 709, 1931.

142 Hall, see Kayser und Konen, Handbuch der Sp. 7, Part 1, 1924.

143 Hamm, Zeit. f. Wiss. Ptg. 13, 105, 1913.

144 Harrison, Albertson and Hosford, Journ. Opt. Soc. Am. 31, 439, 1941.

145 Harrison and McNally, Jr., Phys. Rev. (2) 58, 703, 1940.

146 Hasselberg, see Kayser, Handbuch der Sp. 6, 1912.

147 Hasselberg or Exner und Haschek, ses Kayser, Handbuch der Sp. 5, 1910.

148 Haussmann, Ap. J. 66, 333, 1927.

149 Hetzler, Boreman and Burns, Phys. Rev. (2) 48, 656, 1935.

150 Hitchcock, W. J., Unpublished material, Nov. 1942.

151 Hopfield, Phys. Rev. (2) 37, 160, 1931.

152 Humphreys, Phys. Rev. (2) 47, 712, 1935.

153 Humphreys, Bur. St. Journ. Res. 16, 639 (RP 898) 1936.

154 Humphreys, Bur. St. Journ. Res. 20, 17 (RP 1061) 1938.

155 Humphreys, Bur. St. Journ. Res. 22, 19 (RP 1164) 1939.

156 Humphreys and Meggers, Bur. St. Journ. Res. 10, 139 (RP 521), 1933.

157 Hunter, Phil. Trans. Royal Soc. A 233, 303, 1934.

158 Ingram, Phys. Rev. (2) 32, 172, 1928.

159 Ingram, Phys. Rev. (2) 33, 907, 1929.

160 Ingram, Phys. Rev. (2) 34, 421, 1929.

161 International Standard, see Trans. Intern. Astr. Union 3, 86, 1928.

162 International Standard, see Trans. Intern. Astr. Union 5, 85, 1935.

163 International Standard, see Trans. Intern. Astr. Union 6, 79, 1938.

164 International Standard, see Trans. Intern. Astr. Union 6, 80, 1938.

165 International Standard, see Trans. Intern. Astr. Union 6, 89, 1938.

166 Jackson, Proc. Royal Soc. A 130, 395, 1931.

167 Jackson, Proc. Royal Soc. A 133, 553, 1931.

168 Jackson, Mon. Not. Royal Astr. Soc. 93, 98 (No. 1), 1932.

169 Johnson or Merton and Johnson, see Kayser und Konen, Handbuch der Sp. 8, Part 1, 1932.

170 See Kayser, Handbuch der Sp. 5, 1910.

171 Kayser, Handbuch der Sp. 6, 893, 1912.

172 See Kayser, Handbuch der Sp. 6, 1912.

173 See Kayser und Konen, Handbuch der Sp. 7, Part 1, 1924.

174 See Kayser und Konen, Handbuch der Sp. 7, Part 2, 1930.

175 See Kayser und Konen, Handbuch der Sp. 7, Part 3, 1934.

176 Kiess, Sci. Papers Bur. St. 19, 113 (No. 474), 1923.

177 Kiess, Unpublished material, 1924?.

178 Kiess, Bur. St. Journ. Res. 1, 75 (RP 4), 1928.

179 Kiess, Bur. St. Journ. Res. 5, 775 (RP 229), 1930.

180 Kiess, Bur. St. Journ. Res. 8, 393 (RP 425), 1932.

181 Kiess, Unpublished material, May 1932.

182 Kiess, Bur. St. Journ. Res. 10, 827 (RP 570), 1933.

183 Kiess, Bur. St. Journ. Res. 15, 79 (RP 812) 1935.

184 Kiess, Unpublished material, Jan. 1936, June 1940, Mar. 1941, Apr. 1941.

185 Kiess, Bur. St. Journ. Res. 20, 33 (RP 1062), 1938.

186 Kiess, Bur. St. Journ. Res. 21, 185 (RP 1134), 1938.

187 Kiess, Unpublished material, Feb. 1939, June 1940, Feb. 1941.

188 Kiess, Bur. St. Journ. Res. 24, 1 (RP 1266), 1940.

189 Kiess, Letter, June 1942.

190 Kiess, Unpublished material, Aug. 1942.

191 Kiess, Unpublished material, Oct. 1942.

192 Kiess, Unpublished material, Dec. 1942.

193 Kiess and de Bruin, Bur. St. Journ. Res. 2, 1117 (RP 73), 1929.

194 Kiess and de Bruin, Bur. St. Journ. Res. 4, 667 (RP 172), 1930.

195 Kiess and de Bruin, Bur. St. Journ. Res. 23, 443 (RP 1244), 1939.

196 Kiess, C. C. and Kiess, H. K., Bur. St. Journ. Res. 5, 1205 (RP 255) 1930.

197 Kiess, C. C. and Kiess, H. K., Bur. St. Journ. Res. 6, 621 (RP 296) 1931.

198 Kiess and Lang, Bur. St. Journ. Res. 5, 305 (RP 202), 1930.

199 Kiess and Meggers, Sci. Papers Bur. St. 16, 54 (No. 372), 1920.

200 Kiess and Stowell, Bur. St. Journ. Res. 12, 459 (RP 671), 1934.

201 Kilby, Ap. J. 30, 243, 1909.

202 King, A. S., Mt. Wilson Contr. No. 66; Ap. J. 37, 239, 1913.

203 King, A. S., Mt. Wilson Contr. No. 76; Ap. J. 39, 139, 1914.

204 King, A. S., Mt. Wilson Contr. No. 94; Ap. J. 41, 86, 1915.

205 King, A. S., Mt. Wilson Contr. No. 108; Ap. J. 42, 347, 1915.

206 King, A. S., Mt. Wilson Contr. No. 122; Ap. J. 44, 169, 1916.

207 King, A. S., Mt. Wilson Contr. No. 150; Ap. J. 48, 13, 1918.

208 King, A. S., Mt. Wilson Contr. No. 181; Ap. J. 51, 179, 1920.

209 King, A. S., Mt. Wilson Contr. No. 198; Ap. J. 53, 133, 1921.

210 King, A. S., Mt. Wilson Contr. No. 211; Ap. J. 54, 28, 1921.

211 King, A. S., Mt. Wilson Contr. No. 247; Ap. J. 56, 318, 1922.

212 King, A. S., Mt. Wilson Contr. No. 274; Ap. J. 59, 155, 1924.

213 King, A. S., Mt. Wilson Contr. No. 283; Ap. J. 60, 282, 1924.

214 King, A. S., Unpublished material, 1927?.

215 King, A. S., Mt. Wilson Contr. No. 368; Ap. J. 68, 194, 1928.

216 King, A. S., Mt. Wilson Contr. No. 384; Ap. J. 70, 105, 1929.

217 King, A. S., Mt. Wilson Contr. No. 414; Ap. J. 72, 221, 1930.

218 King, A. S., Mt. Wilson Contr. No. 448; Ap. J. 75, 379, 1932.

219 King, A. S., Mt. Wilson Contr. No. 470; Ap. J. 78, 9, 1933.

220 King, A. S., Mt. Wilson Contr. No. 496; Ap. J. 80, 134, 1934.

221 King, A. S., Mt. Wilson Contr. No. 533; Ap. J. 83, 140, 1935.

222 King, A. S., Mt. Wilson Contr. No. 584; Ap. J. 87, 109, 1938.

BIBLIOGRAPHY

223 King, A. S., Mt. Wilson Contr. No. 608; Ap. J. 89, 377, 1939.

224 King, A. S., Mt. Wilson Contr. No. 651; Ap. J. 94, 226, 1941.

225 King, A. S., Mt. Wilson Contr. No. 678; Ap. J. 97, 323, 1943.

226 King, A. S., see Sitterly and King, Proc. Am. Phil. Soc. 86, 339 (No. 3), 1943.

227 King, A. S., Unpublished material.

228 King, A. S. and Carter, Mt. Wilson Contr. No. 326; Ap. J. 65, 86, 1927.

229 King, A. S. and Moore, Mt. Wilson Contr. No. 681; Ap. J. 98, 33, 1943.

230 Krebs, Zeit. f. Wiss. Ptg. 16, 292, 1917.

231 Kruger and Pattin, Phys. Rev. (2) 52, 621, 1937.

232 Lacroute, Annales de Physique (11) 3, 1, 1935.

233 Lang, Phys. Rev. (2) 31, 773, 1928.

234 Lang, Proc. Nat. Acad. Sci. 14, 32, 1928.

235 Lang, Phys. Rev. (2) 34, 697, 1929.

236 Lang and Vestine, Phys. Rev. (2) 42, 233, 1932.

237 Laporte and Mack, Phys. Rev. (2) 63, 246, 1943.

238 Laporte, Miller and Sawyer, Phys. Rev. (2) 38, 843, 1931.

239 Laun, Bur. St. Journ. Res. 21, 207 (RP 1125), 1938.

240 Livingood, Phys. Rev. (2) 34, 185, 1929.

241 Lorenser, see Kayser und Konen, Handbuch der Sp. 7, Part 1, 1924.

242 Ludwig, Zeit. f. Wiss. Ptg. 16, 157, 1917.

243 Mack, Unpublished material, June 1942.

244 Martin, Phys. Rev. (2) 48, 938, 1935.

245 Mass. Inst. Tech., Wave Length Tables, Wiley, New York, 1939.

246 Mass. Inst. Tech., Unpublished material, May 1941.

247 Mass. Inst. Tech., Unpublished material, June 1942.

248 McCormick and Sawyer, Phys. Rev. (2) 54, 71, 1938.

249 McNally, Jr., Unpublished material, May 1944.

250 McNally, Jr., Harrison and Park, Journ. Opt. Soc. Am. 32, 334, 1942.

251 Meggers, Sci. Papers Bur. St. 20, 19 (No. 499), 1925.

252 Meggers (Bureau of Standards), see Shenstone, Phys. Rev. 30, 255, 1927.

253 Meggers, Sci. Papers Bur. St. 22, 61 (No. 549), 1927.

254 Meggers, see Meggers and Russell, Bur. St. Journ. Res. 2, 733 (RP 55), 1929.

255 Meggers, see Findlay, Phys. Rev. (2) 36, 5, 1930.

256 Meggers, see Shenstone, Phys. Rev. (2) 36, 669, 1930.

257 Meggers, Bur. St. Journ. Res. 6, 1027 (RP 322), 1931.

258 Meggers, see Russell and Meggers, Bur. St. Journ. Res. 9, 625 (RP 497), 1932.

259 Meggers, Bur. St. Journ. Res. 10, 669 (RP 558), 1933.

260 Meggers, Bur. St. Journ. Res. 10, 757 (RP 564), 1933.

261 Meggers, Unpublished material, Feb. 1934.

262 Meggers, Bur. St. Journ. Res. 14, 33 (RP 755), 1935.

263 Meggers, Bur. St. Journ. Res. 14, 487 (RP 781) 1935.

264 Meggers, see Meggers and Russell, Bur. St. Journ. Res. 17, 125 (RP 906), 1936.

265 Meggers, Bur. St. Journ. Res. 24, 153 (RP 1275), 1940.

266 Meggers, see Meggers and Moore, Bur. St. Journ. Res. 25, 83 (RP 1317), 1940.

267 Meggers, Journ. Opt. Soc. Am. 31, 39, 1941.

268 Meggers, see King, A.S., Mt. Wilson Contr. No. 651; Ap. J. 94, 226, 1941.

269 Meggers, Unpublished material, Nov. 1941.

270 Meggers, Rev. Mod. Phys. 14, 96, 1942.

271 Meggers, Unpublished material, Jan. 1943.

272 Meggers, Unpublished material.

273 Meggers and de Bruin, Bur. St. Journ. Res. 3, 765 (RP 116), 1929.

274 Meggers, de Bruin and Humphreys, Bur. St. Journ Res. 7, 643 (RP 364), 1931.

275 Meggers and Dieke, Bur. St. Journ. Res. 9, 121 (RP 462), 1932.

276 Meggers and Humphreys, Bur. St. Journ. Res. 10, 427 (RP 540), 1933.

277 Meggers and Humphreys, Bur. St. Journ. Res. 13, 293 (RP 710), 1934.

278 Meggers and Humphreys, Bur. St. Journ. Res. 18, 543 (RP 992), 1937.

279 Meggers and Humphreys, Bur. St. Journ. Res. 28, 463 (RP 1464), 1942.

280 Meggers and Kiess, Sci. Papers Bur. St. 14, 637 (No. 324), 1918.

281 Meggers and Kiess, Sci. Papers Bur. St. 19, 273 (No. 479), 1924.

282 Meggers and Kiess, Bur. St. Journ. Res. 9, 309 (RP 473), 1932.

283 Meggers and King, Bur. St. Journ. Res. 16, 385 (RP 881), 1936.

284 Meggers and Moore, Bur. St. Journ. Res. 25, 83 (RP 1317), 1940.

285 Meggers and Russell, Bur. St. Journ. Res. 2, 733 (RP 55), 1929.

286 Meggers and Russell, Bur. St. Journ. Res. 17, 125 (RP 906), 1936.

287 Meggers and Scribner, Bur. St. Journ. Res. 4, 169 (RP 139), 1930

288 Meggers and Scribner, Bur. St. Journ. Res. 5, 73 (RP 187), 1930.

289 Meggers and Scribner, Bur. St. Journ. Res. 13, 625 (RP 732), 1934.

290 Meggers and Scribner, Bur. St. Journ. Res. 14, 629 (RP 793), 1935.

291 Meggers and Scribner, Bur. St. Journ. Res. 19, 651 (RP 1053), 1937.

292 Meggers and Shenstone, Phys. Rev. (2) 35, 868, 1930.

293 Meissner, Zeit. f. Phys. 39, 172, 1926.

294 Meissner, Zeit. f. Phys. 40, 839, 1927.

295 Meissner, Ann. der Phys. (5) 31, 505, 1938.

296 Meissner, Ann. der Phys. (5) 31, 518, 1938.

297 Meissner, Bartelt und Eckstein, Zeit. f. Phys. 86, 54, 1933.

298 Meissner und Luft, Ann. der Phys. (5) 29, 698, 1937.

299 Merrill, Bull. Bur. St. 14, 159, 1918.

300 Merton and Johnson, see Fowler and Selwyn, Proc. Royal Soc. A 118, 34, 1928.

301 Mihul, Annales de Physique (10) 9, 294, 1928.

302 Mihul, Annales de Physique (10) 9, 301, 1928.

303 Millikan and Bowen, Phys. Rev. (2) 25, 600, 1925.

304 Molnar and Hitchcock, Journ. Opt. Soc. Am. 30, 523, 1940.

305 Moore, C. E., Phys. Rev. (2) 55, 710, 1939.

306 Moore, C. E. and King, A. S., Publ. Astr. Soc. Pacific 55, 27 (No. 323), 1943.

307 Narayan, Kodaikanal Obs. Bull. 4, 311 (No. 99), 1932.

308 Offermann, see Kayser und Konen, Handbuch der Sp. 7, Part 1, 1924.

309 Olthoff and Sawyer, Phys. Rev. (2) 42, 766, 1932.

310 Paschen, Ann. der Phys. (4) 29, 642, 1909.

311 Paschen, Ann. der Phys. (4) 60, 405, 1919.

312 Paschen, Ann. der Phys. (4) 71, 142, 1923.

313 Paschen, Sitz. der Preuss. Akad. der Wiss., Phys.-Math. Klasse, 32, 536, 1928.

314 Paschen, Sitz. der Preuss. Akad. der Wiss., Phys.-Math. Klasse, 32, 709, 1931.

315 Paschen, Ann. der Phys. (5) 12, 509, 1932.

316 Pasohen und Back, Ann. der Phys. (4) 39, 897, 1912.

317 Paschen und Campbell, Ann. der Phys. (5) 31, 29, 1938.

318 Paschen und Kruger, Ann. der Phys. (5) 8, 1005, 1931.

319 Paschen und Ritschl, Ann. der Phys. (5) 18, 867, 1933.

320 Paul and Polster, Phys. Rev. (2) 59, 424, 1941.

321 Paul and Rense, Phys. Rev. (2) 56, 1110, 1939.

322 Phillips and Kruger, Phys. Rev. (2) 54, 839, 1938.

323 Phillips and Parker, Phys. Rev. (2) 60, 301, 1941.

324 Platt and Sawyer, Phys. Rev. (2) 60, 866, 1941.

325 Price, Phys. Rev. (2) 48, 477, 1935.

326 Puhlmann, Zeit. f. Wiss. Ptg. 17, 97, 1917.

327 Rao, Proc. Royal Soc. A 124, 465, 1929.

328 Rao, Indian Journ. Phys. 7, 561, 1932.

329 Rasmussen, Zeit. f. Phys. 80, 726, 1933.

BIBLIOGRAPHY

330 Rasmussen, Zeit. f. Phys. 83, 404, 1933.

331 Rasmussen, Zeit. f. Phys. 86, 24, 1933.

332 Rasmussen, Zeit. f. Phys. 87, 607, 1934.

333 Reinheimmer, Ann. der Phys. (4) 71, 162, 1923.

334 Robinson, Nature 137, 992, 1936.

335 Robinson, Phys. Rev. (2) 49, 397, 1936.

336 Robinson, Phys. Rev. (2) 51, 726, 1937.

337 Robinson, Phys. Rev. (2) 52, 724, 1937.

338 Rood and Sawyer, Ap. J. 87, 66, 1938.

339 Rosen, Harrison and McNally, Jr., Phys. Rev. (2) 60, 722, 1941.

340 Rosenthal, Ann. der Phys. (5) 4, 49, 1930.

341 Ruedy, Phys. Rev. (2) 41, 588, 1932.

342 Ruedy, Phys. Rev. (2) 44, 757, 1933.

343 Ruedy and Gibbs, Phys. Rev. (2) 46, 880, 1934.

344 Russell, Mt. Wilson Contr. No. 286; Ap. J. 61, 223, 1925.

345 Russell, Publ. Astr. Soc. Pacific 38, 236, 1926.

346 Russell, Mt. Wilson Contr. No. 342; Ap. J. 66, 233, 1927.

347 Russell, Mt. Wilson Contr. No. 344; Ap. J. 66, 283, 1927.

348 Russell, Mt. Wilson Contr. No. 345; Ap. J. 66, 347, 1927.

349 Russell, see Russell and Meggers, Sci. Papers Bur. St. 22, 329 (No. 558), 1927.

350 Russell, Phys. Rev. (2) 31, 27, 1928.

351 Russell, see Meggers and Russell, Bur. St. Journ. Res. 2, 733 (RP 55), 1929.

352 Russell, Phys. Rev. (2) 34, 821, 1929.

353 Russell, see Meggers, Bur. St. Journ. Res. 10, 676, 684 (RP 558), 1933.

354 Russell, Phys. Rev. (2) 46, 989, 1934.

355 Russell, Unpublished material, May 1940.

356 Russell, Unpublished material, Nov. 1941.

357 Russell, Mt. Wilson Contr. No. 663; Ap. J. 96, 11, 1942.

358 Russell, Unpublished material, 1943.

359 Russell, Unpublished material.

360 Russell, Albertson and Davis, Phys. Rev. (2) 60, 641, 1941.

361 Russell and King, A. S., Mt. Wilson Contr. No. 611; Ap. J. 90, 155, 1939.

362 Russell, King, R. B. and Lang, Phys. Rev. (2) 52, 456, 1937.

363 Russell, King, R. B. and Moore, Phys. Rev. (2) 58, 407, 1940.

363a Russell, Moore and Wesks, Trans. Am. Phil. Soc. 34, 111 (Part 2), 1944.

364 Russell and Lang, Mt. Wilson Contr. No. 337; Ap. J. 66, 13, 1927.

365 Russell and Meggers, Sci. Papers Bur. St. 22, 329 (No. 558), 1927.

366 Russell and Meggers, Bur. St. Journ. Res. 9, 625 (RP 497), 1932.

367 Russell and Meggers, Unpublished matsrial.

368 Russell or Moore, see Meggers and Russell, Bur. St. Journ. Res. 17, 125 (RP 906) 1936.

369 Russell and Saunders, Ap. J. 61, 38, 1925.

370 Ryde, Proc. Royal Soc. A 117, 164, 1927.

371 St. John and Babcock, Mt. Wilson Contr. No. 202; Ap. J. 53, 260, 1921.

372 von Salis, Ann. der Phys. (4) 76, 145, 1925.

373 Saunders, Ap. J. 52, 265, 1920.

374 Saunders, Unpublishsd material.

375 Saunders and Russell, Ap. J. 62, 1, 1925.

376 Sawyer and Lang, Phys. Rev. (2) 34, 712, 1929.

377 Sawyer und Paschen, Ann. der Phys. (4) 84, 1, 1927.

378 Schüler, Zeit. f. Phys. 42, 487, 1927.

379 Schumacher, Zeit. f. Wiss. Ptg. 19, 149, 1919.

380 Segrs und Bakker, Zeit. f. Phys. 72, 724, 1931.

381 Shenstone, Phys. Rev. (2) 28, 449, 1926.

382 Shenstone, Phys. Rev. (2) 30, 255, 1927.

383 Shenstone, Phys. Rev. (2) 31, 317, 1928.

384 Shenstone, Phys. Rev. (2) 32, 30, 1928.

385 Shenstone, Phys. Rev. (2) 36, 669, 1930.

386 Shenstone, Phil. Trans. Royal Soc. A 235, 195 (No. 751), 1936.

387 Shenstone, Phil. Trans. Royal Soc. A 237, 453, 1938.

388 Shenstone, Phys. Rev. (2) 57, 894, 1940.

389 See Shenstone, Phys. Rev. (2) 57, 894, 1940.

390 Shenstone, Unpublished material.

391 Smith, Sinclair, Unpublished material.

392 Smith, Stanley, Proc. Nat. Acad. Sci. 13, 65, 1927.

393 Söderqvist, Nova Acta Regiae Societatis Scientiarum Upsaliensis (IV) 9 (No. 7), 1934.

394 Sommer, Zeit. f. Phys. 37, 1, 1926.

395 Sommer, Zeit. f. Phys. 45, 147, 1927.

396 See Stiles, Ap. J. 30, 48, 1909.

397 Stoy, Lick Bull. 17, 179 (No. 480), 1935.

398 Stüting, see Kayser, Handbuch der Sp. 6, 1912.

399 Sullivan, Univ. Pittsburgh Bull. 35, 1 (No. 1), 1938.

400 Sullivan and Burns, Science Studies 9, 7 (No. 3), 1941.

401 Takahashi, Ann. der Phys. (5) 3, 27, 1929.

402 Uhler and Tanch, Ap. J. 55, 291, 1922.

403 Wagman, Univ. Pittsburgh Bull. 34, 1 (No. 1), 1937.

404 Werner, see Kayser und Konen, Handbuch der Sp. 7, Part 3, 1934.

405 Wheatley and Sawyer, Phys. Rev. (2) 61, 591, 1942.

406 White, Phys. Rev. (2) 33, 538, 1929.

407 White, Phys. Rev. (2) 33, 672, 1929.

408 Whitford, Phys. Rev. (2) 46, 793, 1934.

409 Wright, Publ. Lick Obs. 13, 193, 1918.

410 Zeeman und Dik, see de Bruin, Zeit. f. Phys. 38, 94, 1926.

REVISED MULTIPLET TABLE

INDEX—By Pages

Page	Sp	Mult No	Sp	Mult No
1	H	1	- He II	5
2	He II	6	- C II	21
3	C II	22	- N I	6
4	N I	7	- N I	24
5	N I	25	- N II	68
6	N II	69	- O I	11
7	O I	12	- O I	44
8	O I	45	- O II	62
9	O II	63	- O III	35
10	O III	36	- F II	4
11	F II	5	- Ne I	32
12	Ne I	33	- Ne II	70
13	Ne II	71	- Mg II	9
14	Mg II	10	- Al II	65
15	Al II	66	- Si I	28
16	Si I	29	- Si III	8
17	Si III	9	- P V	1
18	S I	1	- S II	48
19	S II	49	- Cl II	8
20	Cl II	9	- Cl III	8
21	Cl III	9	- A II	43
22	A II	44	- A II	123
23	A II	124	- Ca I	13
24	Ca I	14	- Ca III	4
25	Sc I	1	- Sc III	1
26	Ti I	1	- Ti I	54
27	Ti I	55	- Ti I	140
28	Ti I	141	- Ti I	192
29	Ti I	193	- Ti I	268
30	Ti I	269	- Ti II	32
31	Ti II	33	- Ti II	93
32	Ti II	94	- V I	21
33	V I	22	- V I	78
34	V I	79	- V I Unclass.	
35	V II	1	- V II	61
36	V II	62	- V II	162
37	V II	163	- Cr I	18
38	Cr I	19	- Cr I	52
39	Cr I	53	- Cr I	114
40	Cr I	115	- Cr I	173
41	Cr I	174	- Cr I	243
42	Cr I	244	- Cr I Unclass.	
43	Cr I Unclass.	3911.95	- Cr II	36
44	Cr II	37	- Cr II	116
45	Cr II	117	- Mn I	4
46	Mn I	5	- Mn I	59
47	Mn I	60	- Mn II	21
48	Fe I	1	- Fe I	36
49	Fe I	37	- Fe I	91
50	Fe I	90	- Fe I	159
51	Fe I	160	- Fe I	233
52	Fe I	234	- Fe I	308
53	Fe I	309	- Fe I	368
54	Fe I	369	- Fe I	443
55	Fe I	444	- Fe I	549
56	Fe I	550	- Fe I	613a
57	Fe I	613	- Fe I	693
58	Fe I	694	- Fe I	815
59	Fe I	816	- Fe I	918
60	Fe I	919	- Fe I	1012
61	Fe I	1013	- Fe I	1084
62	Fe I	1085	- Fe I	1156
63	Fe I	1157	- Fe I	1232
64	Fe I	1233	- Fe I	1296
65	Fe I	1297	- end of Unclass. Fe I	
66	Fe II	1	- Fe II	54
67	Fe II	55	- Fe II	128
68	Fe II	129	- Fe II	222
69	Fe II	223	- Fe III	65
70	Fe III	66	- Co I	9
71	Co I	10	- Co I	63
72	Co I	64	- Co I	149
73	Co I	150	- Co II	2
74	Ni I	1	- Ni I	88
75	Ni I	89	- Ni I	155
76	Ni I	156	- Ni I	250
77	Ni I	251	- Zn II	3
78	Ga I	1	- Y II	8
79	Y II	9	- Zr I	17
80	Zr I	18	- Zr II	33
81	Zr II	34	- Zr II	108
82	Zr II	109	- Mo II	2
83	Mo II	3	- Ag II	
84	Cd I	1	- La II	4
85	La II	5	- La II	86
86	La II	87	- Ce I	
87	Ce II	1	- Ce II	99
88	Ce II	100	- Ce II	233
89	Ce II	234	- Nd II	7
90	Nd II	8	- Sm I	3
91	Sm II	1	- Sm II	58
92	Sm II	59	- Gd II	1
93	Gd II	2	- Gd II	49
94	Gd II	50	- Gd II	98
95	Gd II	99	- Tb II	
96	Dy I		- Hf II	17
97	Hf II	18	- Ta I	3
98	Ta I	3	- Tl II	
99	Pb I		- U	

Forbidden Lines

Page	Sp	Mult No	Sp	Mult No
100	Be I	1F	- Cl IV	3F
101	A III	1F	- Ti I	15F
102	Ti I	16F	- Ti II	37F
103	Ti II	38F	- V VIII	1F
104	Cr I	1F	- Cr II	26F
105	Cr II	27F	- Fe I	3F
106	Fe I	4F	- Fe I	41F
107	Fe II	1F	- Fe II	38F
108	Fe II	39F	- Fe XV	1F
109	Co II	1F	- Ni XII	1F
110	Ni XIII	1F	- Eu II	2F

REVISED MULTIPLET TABLE

INDEX--By Elements

Sp	Page	Sp	Page	Sp	Page	Sp	Page	Sp	Page	Sp	Page
A I	21	Dy II	96	N III	6	Si I	15,16	A XIV	101	Mn V	105
A II	21,23	Er	96	N IV	6	Si II	16	Al VII	100	Mn VI	105
A III	23	Eu I	92	N V	6	Si III	16,17	Be I	100	Mn IX	105
A IV	23	Eu II	92	Na I	13	Si IV	17	C I	100	Mn X	105
Ag I	83	F I	10	Na II	13	Sm I	90	Ca I	101	N I	100
Ag II	83	F II	10,11	Nd I	89	Sm II	91,92	Ca II	101	N II	100
Al I	14	F III	11	Nd II	89,90	Sn I	84	Ca V	101	Na IV	100
Al II	14,15	F IV	11	Ne I	11,12	Sn II	84	Ca VI	101	Na V	100
Al III	15	F VI	11	Ne II	12,13	Sr I	78	Ca VII	101	Ne III	100
As I	78	Fe I	48-65	Ni I	74-77	Sr II	78	Ca XII	101	Ne IV	100
As II	78	Fe II	66-69	Ni II	77	Ta I	97,98	Ca XIII	101	Ne V	100
Au I	98	Fe III	69,70	O I	6- 8	Ta II	98	Ca XV	101	Ni I	109
Au II	98	Ga I	78	O II	8, 9	Tb I	95	Cl II	100	Ni II	109
B I	2	Ga II	78	O III	9,10	Tb II	95	Cl III	100	Ni VII	109
B II	2	Gd I	92	O IV	10	Te I	84	Cl IV	100	Ni VIII	109
B III	2	Gd II	92-95	O V	10	Th I	99	Co II	109	Ni IX	109
Ba I	84	Ge I	78	O VI	10	Th II	99	Co VI	109	Ni XII	109
Ba II	84	Ge II	78	Os I	98	Th III	99	Co VII	109	Ni XIII	110
Be I	2	H	1	P I	17	Ti I	26-30	Co VIII	109	Ni XV	110
Be II	2	He I	1	P II	17	Ti II	30-32	Co XI	109	Ni XVI	110
Bi I	99	He II	1, 2	P III	17	Ti IV	32	Cr I	104	O I	100
Bi II	99	Hf I	96	P IV	17	Tl I	98	Cr II	104,105	O II	100
Br I	78	Hf II	96,97	P V	17	Tl II	98	Cr III	105	O III	100
Br II	78	Hg I	98	Pb I	99	Tm I	96	Cr IV	105	P I	100
C I	2	Hg II	98	Pb II	99	Tm II	96	Cr V	105	P II	100
C II	2, 3	Ho I	96	Pd I	83	U	99	Cr VIII	105	S I	100
C III	3	Ho II	96	Pd II	83	V I	32-34	Cr IX	105	S II	100
C IV	3	I I	84	Pr I	89	V II	35-37	Cu II	110	S III	100
Ca I	23,24	I II	84	Pr II	89	W I	98	Eu II	110	S VIII	100
Ca II	24	In I	84	Pt I	98	W II	98	F II	100	S XII	100
Ca III	24	In II	84	Pt II	98	Xe I	84	F III	100	Sc II	101
Cb I	82	Ir I	98	Ra I	99	Xe II	84	F IV	100	Sc III	101
Cb II	82	K I	23	Ra II	99	Y I	78	Fe I	105,106	Sc VI	101
Cd I	84	K II	23	Rb I	78	Y II	78,79	Fe II	107,108	Sc VII	101
Cd II	84	K III	23	Rb II	78	Yb I	96	Fe III	108	Si I	100
Ce I	86	Kr I	78	Re I	98	Yb II	96	Fe V	108	Sr II	110
Ce II	87-89	Kr II	78	Rh I	83	Zn I	77	Fe VI	108	Ti I	101,10
Ce III	89	La I	84	Rh II	83	Zn II	77	Fe VII	108	Ti II	102,10
Cl I	19	La II	84-86	Rn I	99	Zr I	79,80	Fe X	108	Ti III	103
Cl II	19,20	La III	86	Ru I	83	Zr II	80-82	Fe XI	108	Ti VII	103
Cl III	20,21	Li I	2	Ru II	83			Fe XIII	108	Ti VIII	103
Cl IV	21	Li II	2	S I	18			Fe XIV	108	V II	103
Co I	70-73	Lu I	96	S II	18,19			Fe XV	108	V III	103
Co II	73	Lu II	96	S III	19			K IV	101	V IV	103
Cr I	37-43	Mg I	13	S IV	19			K V	101	V VIII	103
Cr II	43-45	Mg II	13,14	Sb I	84			K VI	101	Xe II	110
Cs I	84	Mn I	45-47	Sb II	84	Forbidden Lines		Kr III	110	Xe III	110
Cs II	84	Mn II	47	Sc I	25	A III	101	La II	110	Y II	110
Cu I	77	Mo I	82	Sc II	25	A IV	101	La III	110	Y V	110
Cu II	77	Mo II	82,83	Sc III	25	A V	101	Mg VI	100	Zr II	110
D	1	N I	3- 5	Se I	78	A X	101	Mn II	105	Zr III	110
Dy I	96	N II	5, 6	Se II	78	A XI	101	Mn IV	105	Zr VI	110

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
H I P 13.54 Anal A List A June 1942						
6562.817	A	H_α	10.15	12.04	—	2^2P^o–3^2D etc
4861.332	A	H_β	10.15	12.69	—	(1) 4^2D etc
4340.468	A	H_γ	10.15	13.00	—	5^2D etc
4101.737	A	H_δ	10.15	13.16	—	6^2D etc
3970.074	A	H_ϵ	10.15	13.26	—	7^2D etc
3889.051	A	H_8	10.15	13.33	—	2^2P^o–8^2D etc
3835.386	A	H_9	10.15	13.37	—	(2) 9^2D etc
3797.900	A	H_{10}	10.15	13.40	—	10^2D etc
3770.632	A	H_{11}	10.15	13.43	—	11^2D etc
3750.154	A	H_{12}	10.15	13.45	—	12^2D etc
3734.370	A	H_{13}	10.15	13.46	—	2^2P^o–13^2D etc
3721.940	A	H_{14}	10.15	13.47	—	(3) 14^2D etc
3711.973	A	H_{15}	10.15	13.48	—	15^2D etc
3703.855	A	H_{16}	10.15	13.49	—	16^2D etc
3697.154	A	H_{17}	10.15	13.49	—	17^2D etc
3691.557	A	H_{18}	10.15	13.50	—	2^2P^o–18^2D etc
3686.833	A	H_{19}	10.15	13.50	—	(4) 19^2D etc
3682.810	A	H_{20}	10.15	13.51	—	20^2D etc
3679.355	A	H_{21}	10.15	13.51	—	21^2D etc
3676.365	A	H_{22}	10.15	13.51	—	22^2D etc
3673.761	A	H_{23}	10.15	13.51	—	2^2P^o–23^2D etc
3671.478	A	H_{24}	10.15	13.52	—	(5) 24^2D etc
3669.466	A	H_{25}	10.15	13.52	—	25^2D etc
3667.684	A	H_{26}	10.15	13.52	—	26^2D etc
3666.097	A	H_{27}	10.15	13.52	—	27^2D etc
3664.679	A	H_{28}	10.15	13.52	—	2^2P^o–28^2D etc
3663.406	A	H_{29}	10.15	13.52	—	(6) 29^2D etc
3662.258	A	H_{30}	10.15	13.52	—	30^2D etc
3661.221	A	H_{31}	10.15	13.53	—	31^2D etc
3660.279	A	H_{32}	10.15	13.53	—	32^2D etc
3659.423	A	H_{33}	10.15	13.53	—	33^2D etc
3658.641	A	H_{34}	10.15	13.53	—	2^2P^o–34^2D etc
3657.926	A	H_{35}	10.15	13.53	—	(7) 35^2D etc
3657.269	A	H_{36}	10.15	13.53	—	36^2D etc
3656.666	A	H_{37}	10.15	13.53	—	37^2D etc
3656.135	A	H_{38}	10.15	13.53	—	38^2D etc
3645.981	A		10.15	13.54		Limit
12818.05	A	—	12.04	13.00	—	3^2D–5^2F^o etc
10938.09	A	—	12.04	13.16	—	(8) 6^2F^o etc
10049.38	A	—	12.04	13.26	—	7^2F^o etc
9545.974	A	—	12.04	13.33	—	8^2F^o etc
9229.017	A	—	12.04	13.37	—	9^2F^o etc
9014.911	A	—	12.04	13.40	—	3^2D–10^2F^o etc
8862.787	A	—	12.04	13.43	—	(9) 11^2F^o etc
8750.475	A	—	12.04	13.45	—	12^2F^o etc
8665.021	A	—	12.04	13.46	—	13^2F^o etc
8598.394	A	—	12.04	13.47	—	14^2F^o etc
8545.384	A	—	12.04	13.48	—	3^2D–15^2F^o etc
8502.487	A	—	12.04	13.49	—	(10) 16^2F^o etc
8467.256	A	—	12.04	13.49	—	17^2F^o etc
8437.958	A	—	12.04	13.50	—	18^2F^o etc
8413.321	A	—	12.04	13.50	—	19^2F^o etc
8392.400	A	—	12.04	13.51	—	3^2D–20^2F^o etc
8374.478	A	—	12.04	13.51	—	(11) 21^2F^o etc
8359.006	A	—	12.04	13.51	—	22^2F^o etc
8345.553	A	—	12.04	13.51	—	23^2F^o etc
8333.785	A	—	12.04	13.52	—	24^2F^o etc
8323.428	A	—	12.04	13.52	—	3^2D–25^2F^o etc
8314.262	A	—	12.04	13.52	—	(12) 26^2F^o etc
8306.115	A	—	12.04	13.52	—	27^2F^o etc
8298.837	A	—	12.04	13.52	—	28^2F^o etc
8292.309	A	—	12.04	13.52	—	29^2F^o etc
8286.434	A	—	12.04	13.52	—	3^2D–30^2F^o etc
8281.125	A	—	12.04	13.53	—	(13) 31^2F^o etc
8276.310	A	—	12.04	13.53	—	32^2F^o etc
8271.934	A	—	12.04	13.53	—	33^2F^o etc
8267.941	A	—	12.04	13.53	—	34^2F^o etc
8264.288	A	—	12.04	13.53	—	3^2D–35^2F^o etc
8260.938	A	—	12.04	13.53	—	(14) 36^2F^o etc
8257.859	A	—	12.04	13.53	—	37^2F^o etc
8255.153	A	—	12.04	13.53	—	38^2F^o etc
8203.572	A	—	12.04	13.54	—	Limit

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
D I P 13.54 Anal A List B June 1942						
6561.032	A	D_α	10.16	12.04	—	2^2P^o–3^2D etc
4860.029	A	D_β	10.16	12.70	—	(1) 4^2D etc
4339.287	A	D_γ	10.16	13.00	—	5^2D etc
4100.621	A	D_δ	10.16	13.17	—	6^2D etc
3968.995	A	D_ϵ	10.16	13.27	—	7^2D etc
3887.993	A	D_8	10.16	13.33	—	8^2D etc
12814.56	A	—	12.04	13.00	—	3^2D–5^2F^o etc
10935.11	A	—	12.04	13.17	—	(2) 6^2F^o etc
10046.64	A	—	12.04	13.27	—	7^2F^o etc
9543.376	A	—	12.04	13.33	—	8^2F^o etc

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
He I I P 24.48 Anal A List B Jan 1943						
10830.341	A	2500	19.73	20.87	1–2	2^3S–2^3P^o
10830.250	A	1500	19.73	20.87	1–1	(1)
10829.081	A	500	19.73	20.87	1–0	
3888.646	B	(10) (7) (3)	19.73	22.91	1–2 / 1–1 / 1–0	3^3S–3^3P^o (2)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
He I oontinued						
3187.743	B	(8)	19.73	23.61	—	2^3S–4^3P^o (3)
5015.675	B	(6)	20.53	22.99	0–1	2^1S–3^1P^o (4)
3964.727	B	(4)	20.53	23.64	0–1	2^1S–4^1P^o (5)
3613.641	B	(3)	20.53	23.94	0–1	2^1S–5^1P^o (6)
3447.594	D	(2)	20.53	24.11	0–1	2^1S–6^1P^o (7)
3354.550	D	(2)	20.53	24.21	0–1	2^1S–7^1P^o (8)
3296.786	D	(1)	20.53	24.27	0–1	2^1S–8^1P^o (9)
7065.188	B	(5)	20.87	22.62	2,1–1	2^3P^o–3^3S
7065.719	D	(1)	20.87	22.62	0–1	(10)
5875.618	B)	(10)D_3	20.87	22.97	2–	2^3P^o–3^3D
5875.650	D)		20.87	22.97	1–	(11)
5875.989	D	(1)	20.87	22.97	0–	
4713.143	B	(3)	20.87	23.49	2,1–1	2^3P^o–4^3S
4713.373	D	(1)	20.87	23.49	0–1	(12)
4517.43	P	Forb	20.87	23.61	2–	2^3P^o–4^3P^o (13)
4471.477	B	(6)	20.87	23.63	2,1–	2^3P^o–4^3D
4471.688	D	(1)	20.87	23.63	0–	(14)
4469.92	P	Forb	20.87	23.63	2–	2^3P^o–4^3F^o (15)
4120.812	B	(3)	20.87	23.87	2,1–1	2^3P^o–5^3S
4120.993	D	(1)	20.87	23.87	0–1	(16)
4045.16	P	Forb	20.87	23.92	2–	2^3P^o–5^3P^o (17)
4026.189	B	(5)	20.87	23.94	2,1–	2^3P^o–5^3D
4026.362	D	(1)	20.87	23.94	0–	(18)
4025.49	P	Forb	20.87	23.94	2–	2^3P^o–5^3F^o (19)
3867.477	D	(2)	20.87	24.07	2,1–1	2^3P^o–6^3S
3867.631	D	(1)	20.87	24.07	0–1	(20)
3829.47	P	Forb	20.87	24.10	2–	2^3P^o–6^3P^o (21)
3819.606	B	(4)	20.87	24.11	2,1–	2^3P^o–6^3D
3819.761	D	(1)	20.87	24.11	0–	(22)
3819.25	P	Forb	20.87	24.11	2–	2^3P^o–6^3F^o (23)
3732.861	C	(1)	20.87	24.18	2,1–1	2^3P^o–7^3S
3732.992	D	(1)	20.87	24.18	0–1	(24)
3705.003	B	(3)	20.87	24.21	2,1–	2^3P^o–7^3D
3705.140	C	(1)	20.87	24.21	0–	(25)
3704.79	P	Forb	20.87	24.21	2–	2^3P^o–7^3F^o (26)
3651.971	D	(1)	20.87	24.25	2,1–1	2^3P^o–8^3S
3652.119	D	(1)	20.87	24.25	0–1	(27)
3634.235	D	(2)	20.87	24.27	2,1–	2^3P^o–8^3D
3634.373	D	(1)	20.87	24.27	0–	(28)
3634.10	P	Forb	20.87	24.27	2–	2^3P^o–8^3F^o (29)
3599.304	D	(1)	20.87	24.30	2,1–1	2^3P^o–9^3S
3599.442	D	(1)	20.87	24.30	0–1	(30)
3587.252	D	(2)	20.87	24.31	2,1–	2^3P^o–9^3D
3587.396	D	—	20.87	24.31	0–	(31)
3587.16	P	Forb	20.87	24.31	2–	2^3P^o–9^3F^o (32)
3562.950	D	(1)	20.87	24.34	—	2^3P^o–10^3S (33)
3554.394	D	(1)	20.87	24.35	2,1–	2^3P^o–10^3D
3554.524	D	(1)	20.87	24.35	0–	(34)
3536.820	D	(1)	20.87	24.36	—	2^3P^o–11^3S (35)
3530.487	D	(1)	20.87	24.37	—	2^3P^o–11^3D (36)
3517.327	D	(1)	20.87	24.38	—	2^3P^o–12^3S (37)
3512.511	D	(1)	20.87	24.39	—	2^3P^o–12^3D (38)
3502.381	D	(1)	20.87	24.40	—	2^3P^o–13^3S (39)
3498.641	D	(1)	20.87	24.40	—	2^3P^o–13^3D (40)
3490.62	D	(1)	20.87	24.41	—	2^3P^o–14^3S (41)
3487.731	D	(1)	20.87	24.41	—	2^3P^o–14^3D (42)
3478.97	D	(1)	20.87	24.42	—	2^3P^o–15^3D (43)
3471.80	D	(1)	20.87	24.43	—	2^3P^o–16^3D (44)
7281.349	B	(3)	21.13	22.82	1–0	2^1P^o–3^1S (45)
6678.149	B	(6)	21.13	22.97	1–2	2^1P^o–3^1D (46)
5047.736	B	(2)	21.13	23.57	1–0	2^1P^o–4^1S (47)
4921.929	B	(4)	21.13	23.63	1–2	2^1P^o–4^1D (48)
4920.35	P	Forb	21.13	23.64	1–3	2^1P^o–4^1F^o (49)
4437.549	B	(1)	21.13	23.91	1–0	2^1P^o–5^1S (50)
4387.928	B	(3)	21.13	23.94	1–2	2^1P^o–5^1D (51)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
He I continued						
4168.971	D	(1)	21.13	24.09	1–0	2^1P^o–6^1S (52)
4143.759	B	(2)	21.13	24.11	1–2	2^1P^o–6^1D (53)
4023.986	D	(1)	21.13	24.19	1–0	2^1P^o–7^1S (54)
4009.270	D	(1)	21.13	24.21	1–2	2^1P^o–7^1D (55)
4007.81	P	Forb	21.13	24.21	1–1	2^1P^o–7^1P^o (56)
3935.914	D	(1)	21.13	24.26	1–0	2^1P^o–8^1S (57)
3926.530	D	(1)	21.13	24.27	1–2	2^1P^o–8^1D (58)
3878.180	D	(1)	21.13	24.31	1–0	2^1P^o–9^1S (59)
3871.819	D	(1)	21.13	24.31	1–2	2^1P^o–9^1D (60)
3838.094	D	(1)	21.13	24.34	1–0	2^1P^o–10^1S (61)
3833.574	D	(1)	21.13	24.35	1–2	2^1P^o–10^1D (62)
3805.765	D	(1)	21.13	24.37	1–2	2^1P^o–11^1D (63)
3784.886	D	(1)	21.13	24.39	1–2	2^1P^o–12^1D (64)
3768.81	D	(1)	21.13	24.40	1–2	2^1P^o–13^1D (65)
3756.10	D	(1)	21.13	24.41	1–2	2^1P^o–14^1D (66)
9463.57	C	60	22.62	23.92	—	3^3S–5^3P^o (67)
8361.77	C	(4)	22.62	24.10	—	3^3S–6^3P^o (68)
7816.16	C	(4)	22.62	24.20	—	3^3S–7^3P^o (69)
11012.97	A	30	22.82	23.94	0–1	3^1S–5^1P^o (70)
9603.50	E	6	22.82	24.11	0–1	3^1S–6^1P^o (71)
11969.07	A	20	22.91	23.94	—	3^3P^o–5^3D (72)
10667.60	A	30	22.91	24.07	—	3^3P^o–6^3S (73)
10311.18	C)	40	22.91	24.11	—	3^3P^o–6^3D
10311.37	C)		22.91	24.11	—	(74)
9702.66	E	10	22.91	24.18	—	3^3P^o–7^3S (75)
9516.51	C)	30	22.91	24.21	—	3^3P^o–7^3D
9516.66	C)		22.91	24.21	—	(76)
9063.40	E	6	22.91	24.27	—	3^3P^o–8^3D (77)
10996.55	A	5	22.97	24.10	—	3^3D–6^3P^o (78)
10912.92	A	100	22.97	24.11	—	3^3D–6^3F^o (79)
10072.10	E	2	22.97	24.20	—	3^3D–7^3P^o (80)
10027.73	E	40	22.97	24.21	—	3^3D–7^3F^o (81)
9526.17	E	10	22.97	24.27	—	3^3D–8^3F^o (82)
9210.28	E	6	22.97	24.31	—	3^3D–9^3F^o (83)
10916.98	A	50	22.97	24.11	2–3	3^1D–6^1F^o (84)
10031.16	E	15	22.97	24.21	2–3	3^1D–7^1F^o (85)
9529.27	E	4	22.97	24.27	2–3	3^1D–8^1F^o (86)
11225.83	A	6	22.99	24.09	1–0	3^1P^o–6^1S (87)
11044.95	A	40	22.99	24.11	1–2	3^1P^o–6^1D (88)
10138.50	E	10	22.99	24.21	1–2	3^1P^o–7^1D (89)
9625.80	E	3	22.99	24.27	1–2	3^1P^o–8^1D (90)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
He II I P 54.17 Anal A List A June 1942						
4685.682	A	—	48.16	50.80	—	3^2D–4^2F^o etc
3203.104	A	—	48.16	52.02	—	(1) 5^2F^o etc
10123.61	A	—	50.80	52.02	—	4^2F^o–5^2G etc
6560.099	A	—	50.80	52.68	—	(2) 6^2G etc
5411.524	A	—	50.80	53.08	—	7^2G etc
4859.323	A	—	50.80	53.34	—	8^2G etc
4541.59	A	—	50.80	53.51	—	9^2G etc
4338.67	A	—	50.80	53.64	—	4^2F^o–10^2G etc
4199.83	A	—	50.80	53.74	—	(3) 11^2G etc
4100.04	A	—	50.80	53.81	—	12^2G etc
4025.60	A	—	50.80	53.86	—	13^2G etc
3968.43	A	—	50.80	53.91	—	14^2G etc
3923.48	A	—	50.80	53.94	—	4^2F^o–15^2G etc
3887.44	A	—	50.80	53.97	—	(4) 16^2G etc
3858.07	A	—	50.80	54.00	—	17^2G etc
3833.80	A	—	50.80	54.02	—	18^2G etc
3813.50	A	—	50.80	54.03	—	19^2G etc
3796.33	A	—	50.80	54.05	—	4^2F^o–20^2G etc
3781.68	A	—	50.80	54.06	—	(5) 21^2G etc
3644.47	A	—	50.80	54.18	—	Limit

Laboratory I A	Rsf	Int	E P Low	E P High	J	Multiplet (No)
Hs II continued						
11626.40	A	—	52.02	53.08	—	$5^2G-7^2H^o$ etc
9344.93	A	—	52.02	53.34	—	(6) 8^2H^o etc
8236.77	A	—	52.02	53.51	—	9^2H^o etc
7592.74	A	—	52.02	53.64	—	10^2H^o etc
7177.50	A	—	52.02	53.74	—	11^2H^o etc
6890.88	A	—	52.02	53.81	—	$5^2G-13^2H^o$ etc
6683.2	A	—	52.02	53.86	—	(7) 13^2H^o etc
6527.10	P	—	52.02	53.91	—	14^2H^o etc
6406.3	A	—	52.02	53.94	—	15^2H^o etc
6310.8	A	—	52.02	53.97	—	16^2H^o etc
6233.8	A	—	52.02	54.00	—	17^2H^o etc
6170.6	A	—	52.02	54.02	—	$5^2G-18^2H^o$ etc
6118.2	A	—	52.02	54.03	—	(8) 19^2H^o stc
6074.1	A	—	52.02	54.05	—	20^2H^o stc
6036.7	A	—	52.02	54.06	—	21^2H^o stc
5694.46	A	—	52.02	54.18	—	Limit

Wids Fins Structure

Li I I P 5.37 Anal A List B Jan 1943

6707.74 // 6707.89	A) A)	1000R	(0.00 0.00	1.84 1.84	½-1½ ½- ½	$2^2S-2^2P^o$ (1)
3232.61	B	50R	0.00	3.82	—	$2^2S-3^2P^o$ (2)
8126.52	B	(500)	1.84	3.36	—	$2^2P^o-3^2S$ (3)
6103.642	C	500R	1.84	3.86	—	$2^2P^o-3^2D$ (4)
4971.92	B	10r	1.84	4.32	—	$2^2P^o-4^2S$ (5)
4602.99	B	100R	1.84	4.52	—	$2^2P^o-4^2D$ (6)

Li II I P 75.31 Anal A List D Jan 1943

5483.55 to 5485.65	A)	10	58.77	61.02	—	$2^3S-2^3P^o$ (1)
3684.1	B	2	68.48	71.83	—	$3^3S-4^3P^o$ (2)
4156.3	B	0.5	68.98	71.95	0-1	$3^1S-4^1P^o$ (3)
4881.3	B	2.5	69.07	71.60	—	$3^3P^o-4^3S$ (4)
4325.7	B	3	69.07	71.92	—	$3^3P^o-4^3D$ (5)

Very wids fine structure

Be I I P 9.28 Anal A List C Feb 1943

3321.347	A	30	2.71	6.43	2-1	$2^3P^o-3^3S$
3321.086	A	20	2.71	6.43	1-1	(1)
3321.013	A	10	2.71	6.43	0-1	
8254.10	B	10	5.25	6.75	1-0	$2^1P^o-3^1S$ (2)
4572.671	C	15	5.25	7.95	1-2	$2^1P^o-3^1D$ (3)
4407.911	B	10	5.25	8.05	1-0	$2^1P^o-4^1S$ (4)
3813.402	B	15	5.25	8.49	1-2	$2^1P^o-4^1D$ (5)
3736.280	B	10	5.25	8.56	1-0	$2^1P^o-5^1S$ (6)
3515.538	B	12	5.25	8.77	1-2	$2^1P^o-5^1D$ (7)

Be II I P 18.13 Anal A List D Feb 1943

3130.416// 3131.064	A A	50 30	0.00 0.00	3.94 3.94	½-1½ ½- ½	$2^2S-2^2P^o$ (1)
3274.640	A	10	10.89	14.66	—	$3^2S-4^2P^o$ (2)
5270.843	A	12	11.91	14.25	1½- ½	$3^2P^o-4^2S$
5270.322	A	10	11.91	14.25	½- ½	(3)
4361.025	A	10	11.91	14.74	1½-	$3^2P^o-4^2D$
4360.690	A	9	11.91	14.74	½-	(4)
3241.835	A	10	11.91	15.72	1½- ½	$3^2P^o-5^2S$ † (5)
4673.462	A	20	12.10	14.75	—	$3^2D-4^2F^o$ (6)

B I See introduction

B II I P 25.02 Anal B List D Feb 1943

3451.41	A	10	9.06	12.64	1-2	$2^1P^o-2p^2\ ^1D$ (1)
4121.95	A	7	18.60	21.59	—	$3^3D-4^3F^o$ (2)

B III I P 37.77 Anal A List B Feb 1943

4243.60	A	3d	29.98	32.89	—	$4^2P^o-5^2D$ (1)
4487.46	A	5d	30.14	32.89	—	$4^2D-5^2F^o$ (2)
4497.58	A	10d	30.15	32.89	—	$4^2F^o-5^2G$ (3)

REVISED
See NSRDS-NBS 3, Section 3, 1970

C I I P 11.30 Anal B List A March 1943

10691.36	A	50	7.46	8.61	2-3	$3s^3P^o-3p^3D$
10683.18	A	25	7.45	8.61	1-2	(1)
10685.44	A	10	7.45	8.60	0-1	
10739.59	A	8	7.46	8.61	2-2	
10707.44	A	8	7.45	8.60	1-1	
10754.09	P		7.46	8.60	2-1	
9658.49	A	2	7.46	8.73	2-1	$3s^3P^o-3p^3S$
9630.86	A	1	7.45	8.73	1-1	(2)
9603.09	A	0	7.45	8.73	0-1	
9094.89	A	25	7.46	8.81	2-2	$3s^3P^o-3p^3P$
9078.32	A	6	7.45	8.81	1-1	(3)
9111.85	A	10	7.46	8.81	2-1	
9088.57	A	8	7.45	8.81	1-0	
9061.48	A	15	7.45	8.81	1-2	
9062.53	A	10	7.45	8.81	0-1	
5041.66	B	3	7.46	9.90	2-3	$3s^3P^o-4p^3D$
*5039.05	B	3	(7.45 7.45	9.90 9.90	1-2 0-1	(4)
4826.73	B	1	7.46	10.01	2-1	$3s^3P^o-4p^3S$
4817.33	B	1	7.45	10.01	1-1	(5)
4813.84	E	(1)	7.45	10.01	0-1	
4771.72	B	4	7.46	10.04	2-2	$3s^3P^o-4p^3P$
4766.62	B	2	7.45	10.04	1-1	(6)
4775.87	B	3	7.46	10.04	2-1	
4770.00	B	2	7.45	10.04	1-0	
*4763.41	B	4	(7.45 7.45	10.04 10.04	1-2 0-1	
4065.1	C	2	7.46	10.49	2-3?	$3s^3P^o-5p^3D$
*4064.2	C	1	(7.45 7.45	10.49 10.49	1-2? 0-1?	(7)
10653.6	D	(50)	7.65	8.81	1-1	$3s^1P^o-3p^3P$ (8)
9405.77	A	20	7.65	8.96	1-2	$3s^1P^o-3p^1D$ (9)
8335.19	A	10	7.65	9.13	1-0	$3s^1P^o-3p^1S$ (10)
5380.242	B	8	7.65	9.95	1-1	$3s^1P^o-4p^1P$ (11)
5052.122	B	6	7.65	10.09	1-2	$3s^1P^o-4p^1D$ (12)
4932.00	B	5	7.65	10.15	1-0	$3s^1P^o-4p^1S$ (13)
4371.33	C	4	7.65	10.47	1-1	$3s^1P^o-5p^1P$ (14)
4352.1	C	1	7.65	10.49	1-2?	$3s^1P^o-5p^3D$ (15)
4268.99	C	2	7.65	10.54	1-2	$3s^1P^o-5p^1D$ (16)
4231.35	C	1	7.65	10.57	1-0	$3s^1P^o-5p^1S$ (17)
5793.51	E	(3)	7.91	10.04	3-2	$2p^3\ ^3D^o-4p^3P$
5801.17	E	(2)	7.91	10.04	2-1	(18)
5805.76	E	(1)	7.91	10.04	1-0	
11330.36	A	1	8.50	9.59	1-2	$3p^1P-3d^1P^o$ (19)
10548.0	E	(60)	8.50	9.67	1-1	$3p^1P-4s^1P^o$ (20)
6828.5	C	0	8.50	10.31	1-2	$3p^1P-4d^1D^o$ (21)
6587.75	C	4	8.50	10.37	1-1	$3p^1P-4d^1P^o$ (22)
*11894.9	D	(200)	(8.61 8.61	9.65 9.64	3-2 2-1	$3p^3D-4s^3P^o$ (23)
11880.4	D	(15)	8.60	9.64	1-0?	
11849.3	D	(10)	8.61	9.65	2-2	
11863.0	D	(15)	8.61	9.64	1-1	
*11754.0	D	(600)	(8.61 8.61	9.66 9.66	3-4 2-3	$3p^3D-3d^3F^o$ (24)
11747.5	D	(300)	8.60	9.65	1-2	
11801.8	D	(10)	8.61	9.66	3-3	
*11667.1	D	(100)	8.61	9.67	3-3	$3p^3D-3d^3D^o$ (25)
11631.59?	P		8.61	9.67	2-2	
11609.91?	P		8.60	9.67	1-1	
11676.99?	P		8.61	9.67	3-2	
11638.60?	P		8.61	9.67	2-1	
11619.0	D	(30)	8.61	9.67	2-3	
11603.94?	P		8.60	9.67	1-2	
7118.5	E	(6d)	8.61	10.34	—	$3p^3D-4d^3F^o$ (26)

C I continued

13164.1	D	(100)	8.73	9.67	1-1	$3p^3S-4s^1P^o$ (27)
12521.0	D	(30)	8.73	9.72	1-1	$3p^3S-3d^1P^o$ (28)
*11667.1	D	(100)	8.73	9.79	1-2	$3p^3S-3d^3P^o$
11656.0	D	(200)	8.73	9.79	1-1	(29)
12614.8	D	(200)	8.81	9.79	2-2	$3p^3P-3d^3P^o$
*12565.0	D	(30)	8.81	9.79	1-1	(30)
12602.6	D	(40)	8.81	9.79	2-1	
*12565.0	D	(30)	8.81	9.79	1-0	
12582.3	D	(40)	8.81	9.79	1-2	
12551.0	D	(50)	8.81	9.79	0-1	
8018	E	(1d)	8.81	10.35	—	$3p^3P-4d^3D^o$ (31)
7850	E	(1d)	8.81	10.38	—	$3p^3P-4d^3P^o$ (32)

REVISED
See NSRDS-NBS 3, Section 3, 1970

C II I P 24.28 Anal A List A Feb 1943

4744.90	B	1	13.66	16.26	1½-1½	$2p^2P-3^2P^o$
4738.11	B	0	13.66	16.26	½- ½	(1)
6578.03	A	10	14.39	16.26	½-1½	$3^2S-3^2P^o$
6582.85	A	9	14.39	16.26	½- ½	(2)
7236.19	A	8d	16.26	17.97	1½-2½	$3^2P^o-3^2D$
7231.12	A	7d	16.26	17.97	½-1½	(3)
3920.677	A	10	16.26	19.41	1½- ½	$3^2P^o-4^2S$
3918.977	A	9	16.26	19.41	½- ½	(4)
5889.97	A	4	17.97	20.06	2½-1½	$3^2D-4^2P^o$
5891.65	A	3	17.97	20.06	1½- ½	(5)
4267.27	A	20	17.97	20.86	2½-3½	$3^2D-4^2F^o$
4267.02	A	19	17.97	20.86	1½-2½	(6)
3361.09	A	3	17.97	21.64	2½-1½	$3^2D-5^2P^o$
3361.75	A	2	17.97	21.64	1½- ½	(7)
2992.63	A	5d	17.97	22.09	—	$3^2D-5^2F^o$ (8)
3165.51	A	4	18.57	22.47	2½-1½	$2p^3\ ^2D^o-3p^2P$
3167.95	A	3	18.58	22.47	1½- ½	(9)
3165.99	B	1	18.58	22.47	1½-1½	
5536.0	B	1d	19.41	21.64	½-	$4^2S-5^2P^o$ (10)
5336.7	B	0dd	20.06	22.38	1½- ½	$4^2P^o-6^2S$ (11)
5121.69	A	1	20.06	22.47	1½-1½	$4^2P^o-3p^2P$ (12)
3832.12	B	2d	20.06	23.28	1½-2½	$4^2P^o-3p^2D$
3836.10	B	1d	20.06	23.28	½-1½	(13)
6783.75	A	(6)	20.62	22.44	2½-3½	$3s4p^o-3p4D$
6779.74	A	(4)	20.61	22.44	1½-2½	(14)
6780.27	A	(2)	20.61	22.43	½-1½	
6800.50	A	(3)	20.62	22.44	2½-2½	
6791.30	A	(3)	20.61	22.43	1½-1½	
6787.09	A	(2)	20.61	22.43	½- ½	
6812.19	A	(0)	20.62	22.43	2½-1½	
6798.04	A	(1)	20.61	22.43	1½- ½	
5662.51	A	(4)	20.62	22.80	2½-1½	$3s4p^o-3p4S$
5648.08	A	(3)	20.61	22.80	1½-1½	(15)
5640.50	A	(2)	20.61	22.80	½-1½	
5145.16	A	(5)	20.62	23.02	2½-2½	$3s4p^o-3p4P$
5139.21	A	(1)	20.61	23.02	1½-1½	(16)
5137.26	A	(0)	20.61	23.01	½- ½	
5151.08	A	(3d?)	20.62	23.02	2½-1½	
5143.49	A	(2)	20.61	23.01	1½- ½	
5133.29	A	(2)	20.61	23.02	1½-2½	
5132.96	A	(3)	20.61	23.02	½-1½	
5033.2	B	1d	20.83	23.28	1½-2½	$2p^3\ ^2P^o-3p^2D$
5037.0	B	0d	20.83	23.28	½-1½	(17)
3871.62	B	2	20.83	24.02	1½- ½	$2p^3\ ^2P^o-3p^2S$
3868.84	B	1	20.83	24.02	½- ½	(18)
6115.21	A	0	22.00	24.02	1½- ½	$3s^2P^o-3p^2S$ (19)
*7119.45	A	(2)	22.44	24.17	3½-4½	$3p^4D-3d^4F^o$
7115.13	A	(2)	22.44	24.17	2½-3½	(20)
*7112.36	A	(1)	(22.43	24.17	1½-2½	
7133.52	A	(0)	22.43	24.17	½-1½	
7125.49	A	(0)	22.44	24.17	3½-3½	
*7119.45	A	(2)	22.44	24.17	2½-2½	
			22.43	24.17	1½-1½	
6750.22	A	(2)	22.44	24.27	3½-3½	$3p^4D-3d^4D^o$
6738.36	A	(1)	22.44	24.27	2½-2½	(21)
6730.79	A	(0)	22.43	24.27	1½-1½	
*6726.84	A	(0)	22.43	24.26	½- ½	
6754.75	A	(0)	22.44	24.27	3½-2½	
6742.05	A	(0)	22.44	24.27	2½-1½	
*6733.56	A	(0)	(22.43 22.44	24.26 24.27	1½- ½ 2½-3½	
*6726.84	A	(0)	22.43	24.27	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
C II continued						
5856.09	A	(2)	22.44	24.55	3½-2½	$3p^4D-3d^4P^o$
5836.31	A	(1)	22.44	24.55	2½-1½	(22)
5823.13	A	(0)	22.43	24.55	1½- ½	
5843.77	A	(0)	22.44	24.55	2½-2½	
5827.80	A	(1)	22.43	24.55	1½-1½	
5817.87	A	(0)	32.43	24.55	½- ½	
3589.67	A	(4)	22.44	25.88	3½-2½	$3p^4D-4s^4P^o$
•3590.87	A	(2)	(22.44	25.87	2½-1½	(23)
			22.43	25.87	1½- ½	
3584.98	A	(1)	22.44	25.88	2½-2½	
3587.68	A	(2)	22.43	25.87	1½-1½	
3588.92	A	(1)	22.43	25.87	½- ½	
3581.80	B	0	22.43	25.88	1½-2½	
3585.83	A	(2)	22.43	25.87	½-1½	
6098.62	A	3	22.47	24.50	1½-2½	$3p^2P-3d^2D^o$
6095.37	A	2	22.47	24.50	½-1½	(24)
6102.59	A	0	32.47	24.50	1½-1½	
4964.90	A	2	22.47	24.96	1½-1½	$3p^2P-3d^2P^o$
4954.16	B	1	22.47	24.96	½- ½	(25)
•4959.52	B	0d	(22.47	24.96	1½- ½	
			22.47	24.96	½-1½	
7063.4	A	(1n)	22.80	24.55	1½-2½	$3p^4S-3d^4P^o$
7052.9	A	(1n)	22.80	24.55	1½-1½	(26)
7045.8	A	(0n)	22.80	24.55	1½- ½	
4009.90	A	(2)	22.80	25.88	1½-2½	$3p^4S-4s^4P^o$
4017.27	A	(1)	22.80	25.87	1½-1½	(27)
4021.13	A	(0)	22.80	25.87	1½- ½	
4317.42	B	4	23.02	25.88	2½-2½	$3p^4P-4s^4P^o$
4321.95	B	0	23.02	25.87	1½-1½	(28)
•4325.88	B	2	(23.02	25.87	2½-1½	
			23.02	25.87	1½- ½	
4313.50	B	2	23.02	25.88	1½-2½	
4318.92	B	2	23.01	25.87	½-1½	
3039.67	B	0d	23.28	27.34	—	$3p^2D-4d^2F^o$ (29)
5257.36	A	(2)	24.17	26.52	4½-3½	$3d^4F^o-4p^4D$
			(24.17	26.52	3½-2½	(30)
•5259.62	A	(3)	(24.17	26.51	2½-1½	
			(24.17	26.51	1½- ½	
5249.43	A	(0)	24.17	26.52	3½-3½	
•5253.55§§	A	(1)	24.17	26.52	2½-2½	
3949.45	C	0	24.17	27.29	3½-3½	$3d^4F^o-4f^2F$
3947.60	C	0	24.17	27.29	2½-2½	(31)
•3946.35	C	0	24.17	27.29	2½-3½	
3952.08	A	2	24.17	27.30	4½-4½	$3d^4F^o-4f^4F$
3948.15	B	1	24.17	27.30	3½-3½	(32)
•3946.35	C	0	24.17	27.30	—	
3945.10	C	0	24.17	27.30	2½-3½	
3876.188	A	8	24.17	27.36	4½-5½	$3d^4F^o-4f^4G$
3876.409	A	7	24.17	27.35	3½-4½	(33)
3876.670	A	6	24.17	27.35	2½-3½	
3876.051	A	6	24.17	27.35	1½-2½	
3880.59	B	1	24.17	27.35	4½-4½	
3879.60	B	1	24.17	27.35	3½-3½	
3878.22	B	1	24.17	27.35	2½-2½	
5478.6	A	(0)	24.27	26.52	3½-3½	$3d^4D^o-4p^4D$ (34)
5044.8	B	1	24.27	26.71	3½-2½	$3d^4D^o-4p^4P$
5047.2	B	0	24.27	26.71	2½-1½	(35)
4076.00	B	7	24.27	27.30	3½-4½	$3d^4D^o-4f^4F$
4074.53	A	6	24.27	27.30	2½-3½	(36)
4074.89	A	5	24.27	27.30	—	
3980.35	A	3	24.27	27.37	3½-3½	$3d^4D^o-4f^4D$
3973.84	B	1d	24.27	27.37	2½-2½	(37)
3969.38	C	0	24.27	27.37	1½-1½	
3978.87	C	00	24.27	27.37	2½-3½	
3972.44	C	0	24.27	27.37	1½-2½	
3968.63	C	00	24.26	27.37	½-1½	
3970.20	C	0	24.27	27.38	2½-1½	$3d^4D^o-4f^2D$
3977.30	C	0	24.27	27.37	2½-2½	(38)
4411.52	A	5	24.50	27.29	2½-3½	$3d^2D^o-4f^2F$
4411.20	A	5	24.50	27.29	1½-2½	(39)
4410.06	C	4	24.50	27.30	2½-3½	$3d^2D^o-4f^4F$
						(40)
4292.00	C	1	24.50	27.37	2½-2½	$3d^2D^o-4f^4D$
						(41)
4296.11	B	1	24.50	27.37	2½-2½	$3d^2D^o-4f^2D$
4285.96	B	1	24.50	27.38	1½-1½	(42)
3049.44	B	1d	24.50	28.54	—	$3d^2D^o-5f^2F$ (43)
5907.36	A	(1)	24.55	26.64	2½-1½	$3d^4P^o-4p^4S$
5914.92	A	(0)	24.55	26.64	1½-1½	(44)
5919.60	A	(0)	24.55	26.64	½-1½	
4374.28	A	5	24.55	27.37	2½-3½	$3d^4P^o-4f^4D$
4372.49	A	4	24.55	27.37	1½-2½	(45)
4371.59	A	3	24.55	27.37	½-1½	
•4368.14§§	B	4d	24.55	27.37	—	
4376.78	C	2d	24.55	27.37	1½-2½	$3d^4P^o-4f^2D$ (46)
3059.24	B	0d	24.55	28.58	2½-3½	$3d^4P^o-5f^4D$ (47)
4734.75	B	2d	24.69	27.29	3½-3½	$3d^2F^o-4f^2F$
4737.21	B	1d	24.68	27.29	2½-2½	(48)
4630.52	C	1d	24.69	27.36	3½-4½	$3d^2F^o-4f^4G$
4625.71	C	1d	24.68	27.35	2½-3½	(49)
4618.85	A	5d	24.69	27.36	—	$3d^2F^o-4f^2G$ (50)
5119.55	A	2	24.96	27.37	1½-2½	$3d^2P^o-4f^2D$
5114.07	A	2	24.96	27.38	½-1½	(51)

REVISED
See NSRDS-NBS 3, Section 3, 1970

C III I P 47.67 Anal B List A Feb 1943

4647.40	A	20	29.39	32.05	1-2	$3^3S-3^3P^o$
4650.16	A	19	29.39	32.05	1-1	(1)
4651.35	A	18	29.39	32.05	1-0	
5696.0	A	8	31.97	34.13	1-2	$3^1P^o-3^1D$ (2)
6744.2	P		38.05	39.88	2-3	$3s^3P^o-3p^3D$
6730.7	P		38.04	39.87	1-2	(3)
6727.1	P		38.04	39.87	0-1	
5272.56	B	2	38.05	40.39	2-1	$3s^3P^o-3p^3S$
•5253.55§§	A	1	38.04	40.39	1-1	(4)
5244.5	A	0	38.04	40.39	0-1	
4665.90	A	6	38.05	40.69	2-2	$3s^3P^o-3p^3P$
4673.91	A	4	38.05	40.69	2-1	(5)
4663.53	A	4	38.05	40.69	1-0	
3262.23	A	1	38.19	41.97	1-2	$4^3S-3d^3P^o$
3259.44	A	0	38.19	41.98	1-1	(6)
3257.90	A	0	38.19	41.98	1-0	
4325.70	A	8	38.27	41.12	1-2	$3s^1P^o-3p^1D$ (7)
3170.16	A	1d	38.48	42.37	0-1	$4^1S-5^1P^o$ (8)
4516.93	A	4	39.22	41.95	2-1	$4^3P^o-5^3S$
4516.02	A	3	39.22	41.95	1,0-1	(9)
3609.61	A	5	39.22	42.64	2-3	$4^3P^o-5^3D$
3608.96	A	4	39.22	42.64	—	(10)
4247.56	A	1	39.47	42.37	1-1	$3p^1P-5^1P^o$ (11)
3703.52	A	2	39.47	42.80	1-1	$3p^1P-3d^1P^o$ (12)
6156.6	P		39.67	41.67	3-3	$4^3D-3d^3D^o$
6155.4	P		39.67	41.67	2-2	(13)
6154.4	P		39.66	41.67	1-1	
4388.24	A	2	39.67	42.48	3-2	$4^3D-5^3P^o$
4383.24	A	1	39.67	42.48	2-1,2	(14)
4379.97	A	0	39.66	42.48	1-0,1	
3889.18	B	4	39.67	42.84	3-4	$4^3D-5^3F^o$
3885.99	B	3	39.67	42.84	2-3	(15)
3883.80	A	2	39.66	42.84	1-2	
4070.30	B	10	39.74	42.77	4-5	$4^3F^o-5^3G$
4068.97	B	9	39.74	42.77	3-4	(16)
4067.87	A	9	39.74	42.77	2-3	
4122.05	A	3	39.80	42.79	1-2	$4^1P^o-5^1D$ (17)
4187.05	A	10	39.84	42.78	3-4	$4^1F^o-5^1G$ (18)
6871.7	P		39.88	41.67	3-3	$3p^3D-3d^3D^o$
6862.9	P		39.87	41.67	2-2	(19)
6857.3	P		39.87	41.67	1-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
C III continued						
5894.1	P		39.88	41.97	3-2	$3p^3D-3d^3P^o$
5871.6	P		39.87	41.98	2-1	(20)
5857.9	P		39.87	41.98	1-0	
4162.80	A	5	39.88	42.84	3-4	$3p^3D-5^3F^o$
4156.50	A	4	39.87	42.84	2-3	(21)
4152.43	A	3	39.87	42.84	1-2	
5827.1	A	1	40.02	42.14	2-3	$4^1D-3d^1F^o$ (22)
5249.6	A	0	40.02	42.37	2-1	$4^1D-5^1P^o$ (23)
4056.06	A	5	40.02	43.07	2-3	$4^1D-5^1F^o$ (24)

Lines attributed to C III--Classification dubious

4593.47	A	2d	
•4368.14§§	A	4d	
4361.85	A	2	
4001.56	A	0d	
3999.92	A	0d	

REVISED
See NSRDS-NBS 3, Section 3, 1970

C IV I P 64.22 Anal A List A Feb 1943

5801.51	A	4	37.39	39.51	½-1½	$3^2S-3^2P^o$
5812.14	A	3	37.39	39.51	½- ½	(1)
3936	P		54.98	58.12	½-	$5^2S-6^2P^o$ (2)
5023	P		55.41	57.87	1½- ½	$5^2P^o-6^2S$
5021	P		55.41	57.87	½- ½	(3)
4441.81	A	0d	55.41	58.19	—	$5^2P^o-6^2D$ (4)
4789	P		55.54	58.12	—	$5^2D-6^2P^o$ (5)
4647	P		55.54	58.19	—	$5^2D-6^2F^o$ (6)
4665	P		55.54	58.19	—	$5^2F^o-6^2D$ (7)
4658.64	A	5d	55.54	58.20	—	$5^2F^o-6^2G$ etc (8)
4660	P		55.55	58.19	—	$5^2G-6^2F^o$ (9)
6592	P		57.87	59.74	½-	$6^2S-7^2P^o$ (10)
4217	P		57.87	60.80	½-	$6^2S-8^2P^o$ (11)
4737	P		58.19	60.80	—	$6^2D-8^2P^o$ (12)

N I I P 14.49 Anal B List B Feb 1944

8680.24	A	10	10.29	11.71	2½-3½	$3s^4P-3p^4D^o$
8683.38	A	8	10.29	11.71	1½-2½	(1)
8686.13	A	7	10.28	11.70	½-1½	
8718.82	A	6	10.29	11.71	2½-2½	
8711.69	A	7	10.29	11.70	1½-1½	
8703.24	A	6	10.28	11.70	½- ½	
8747.35	A	0	10.29	11.70	2½-1½	
8728.88	A	1	10.29	11.70	1½- ½	
8216.28	A	6	10.29	11.79	2½-2½	$3s^4P-3p^4P^o$
8210.64	A	2	10.29	11.79	1½-1½	(2)
8200.31	A	1	10.28	11.79	½-1½	
8242.34	A	4	10.29	11.79	2½-1½	
8223.07	A	4	10.29	11.79	1½- ½	
8184.80	A	4	10.29	11.79	1½-2½	
8187.95	A	4	10.28	11.79	½-1½	
7468.29	A	10	10.29	11.94	2½-1½	$3s^4P-3p^4S^o$
7442.28	A	8	10.29	11.94	1½-1½	(3)
7423.63	A	7	10.28	11.94	½-1½	
4253.28	B	4	10.29	13.19	2½-3½	$3s^4P-4p^4D^o$
•4254.7	D	4	(10.29	13.19	1½-2½	(4)
			10.28	13.18	½-1½	
4223.04	B	5	10.29	13.21	2½-2½	$3s^4P-4p^4P^o$
4230.35	D	4	10.29	13.21	2½-1½	(5)
4224.74	B	4	10.29	13.21	1½- ½	
4214.73	B	5	10.29	13.21	1½-2½	
4215.92	B	2	10.28	13.21	½-1½	
4151.46	B	12	10.29	13.26	2½-1½	$3s^4P-4p^4S^o$
4143.42	P		10.29	13.26	1½-1½	(6)
4137.63	B	7	10.28	13.26	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N I continued						
9392.80	A	1	10.64	11.96	1½-2½	$3s^2P-3p^2D^o$
9386.79	A	0	10.63	11.95	½-1½	(7)
9460.66	P	(25)	10.64	11.95	1½-1½	
8629.24	A	8	10.64	12.07	1½-1½	$3s^2P-3p^2P^o$
8594.01	A	6	10.63	12.07	½- ½	(8)
8655.88	A	3	10.64	12.07	1½- ½	
8567.74	A	4	10.63	12.07	½-1½	
4935.03	B	10	10.64	13.14	1½- ½	$3s^2P-4p^2S^o$
4914.90	B	5	10.63	13.14	½- ½	(9)
4109.98	B	12	10.64	13.65	1½-2½	$3s^2P-3p'\ ^2D^o$
4099.94	B	9	10.63	13.64	½-1½	(10)
4114.00	B	6	10.64	13.64	1½-1½	
3830.39	B	9	10.64	13.87	1½-1½	$3s^2P-3p'\ ^2P^o$
3822.07	B	6	10.63	13.86	½- ½	(11)
3834.24	B	4	10.64	13.86	1½- ½	
3818.27	B	2	10.63	13.87	½-1½	
11564.8	C	(50)	10.88	11.94	2½-1½	$sp^4\ ^4P-3p^4S^o$
11628.0	C	(80)	10.88	11.94	1½-1½	(12)
11656.0	C	(200)	10.88	11.94	½-1½	
N I continued						
5328.70	B	5	10.88	13.19	2½-3½	$sp^4\ ^4P-4p^4D^o$†
5356.77	B	5	10.88	13.19	1½-2½	(13)
5372.66	B	3d	10.88	13.18	½-1½	
5281.18	B	3	10.88	13.21	2½-2½	$sp^4\ ^4P-4p^4P^o$†
						(14)
9060.6	C	(350)	11.55	12.91	½-1½	$3p^2S^o-3d^2P$
9028.9	C	(50)	11.55	12.92	½- ½	(15)
6008.48	B	10	11.55	13.61	½-1½	$3p^2S^o-4d^2P$
5999.47	B	6	11.55	13.61	½- ½	(16)
11294.0	C	(125)	11.71	12.81	3½-2½	$3p^4D^o-4s^4P$
11313.8	C	(30)	11.71	12.80	2½-1½	(17)
11329.0	C	(200)	11.70	12.79	1½- ½	
11327.5	C	(10)	11.71	12.81	2½-2½	
*10113.4	C	(900)	(11.71	12.93	3½-4½†	$3p^4D^o-3d^4F$
			(11.71	12.93	2½-3½?	(18)
			(11.70	12.92	1½-2½?	
			(11.70	12.92	½-1½?	
10164.5	C	(30)	11.71	12.93	3½-3½?	
10147.3	C	(40)	11.71	12.92	2½-2½?	
9862.5	C	(60)	11.71	12.96	3½-3½	$3p^4D^o-3d^4D$
9821.8	C	(10)	11.71	12.96	2½-2½	(19)
N I continued						
6644.96	B	9	11.71	13.57	3½-2½	$3p^4D^o-5s^4P$†
6653.41	B	5	11.71	13.56	2½-1½	(20)
6656.61	B	1	11.70	13.56	1½- ½	
6628.53	B	3	11.71	13.57	2½-2½	
6637.01	B	4	11.70	13.56	1½-1½	
6646.52	B	2	11.70	13.56	½- ½	
6482.74	B	9	11.71	13.62	3½-4½	$3p^4D^o-4d^4F$
6484.88	B	9	11.71	13.61	2½-3½	(21)
6483.75	B	3	11.70	13.61	1½-2½	
6481.73	B	2	11.70	13.60	½-1½	
6506.45	B	0	11.71	13.61	3½-3½	
6499.52	B	3	11.71	13.61	2½-2½	
6491.28	B	3	11.70	13.60	1½-1½	
*6468.32	B	4	(11.71	13.62	3½-3½	$3p^4D^o-4d^4D$†
			11.71	13.62	2½-2½	(22)
6457.93	B	3	11.70	13.61	1½-1½	
6441.70	B	5	11.71	13.63	3½-2½	$3p^4D^o-4d^4P$
6437.01	B	4	11.70	13.62	1½- ½	(23)
6420.47	B	3	11.71	13.63	2½-2½	
5616.54	B	5	11.71	13.91	3½-2½	$3p^4D^o-6s^4P$†
5623.20	B	4	11.71	13.90	2½-1½	(24)
5625.43	B	2	11.70	13.90	1½- ½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
I continued						
560.37	B	9	11.71	13.93	3½-4½†	$3p^4D^o-5d^4F$
564.37	B	9	11.71	13.92	2½-3½†	(25)
545.11	B	3	11.71	13.94	3½-2½	$3p^4D^o-5d^4P$ (26)
86.9	C	(100)	11.79	12.81	2½-2½	$3p^4P^o-4s^4P$
633.9	C	(8)	11.79	12.80	1½-1½	(27)
388.0	C	(75)	11.79	12.80	2½-1½	
128.6	C	(20)	11.79	12.81	1½-2½	
303.4	C	(75)	11.79	12.80	½-1½	
539.0	C	(125)	11.79	12.96	2½-3½	$3p^4P^o-3d^4D$
506.5	C	(70)	11.79	12.96	1½-2½	(28)
548.0	C	(60)	11.79	12.96	2½-2½	
45.22	B	4	11.79	13.57	2½-2½†	$3p^4P^o-5s^4P$†
3.10	B	1	11.79	13.56	2½-1½†	(29)
.90	B	1	11.79	13.57	1½-2½	
752.40	B	4	11.79	13.62	2½-3½	$3p^4P^o-4d^4D$
758.60	B	4	11.79	13.62	1½-2½	(30)
723.13	B	9	11.79	13.63	2½-2½	$3p^4P^o-4d^4P$
733.48	B	6	11.79	13.62	½- ½	(31)
706.30	B	4	11.79	13.63	1½-2½	
741.29	B	3	11.79	13.62	1½- ½	
829.53	B	6	11.79	13.91	2½-2½	$3p^4P^o-6s^4P$†
841.01	B	2	11.79	13.90	1½-1½	(32)
854.16	B	2	11.79	13.90	2½-1½	
816.48	B	2	11.79	13.91	1½-2½	
752.64	B	4	11.79	13.94	2½-2½	$3p^4P^o-5d^4P$
						(33)
1186.9	C	(100)	11.94	12.96	1½-2½†	$3p^48^o-3d^4P$
1288.0	C	(75)	11.94	12.95	1½-1½†	(34)
1327.7	C	(150)	11.94	12.95	1½- ½†	
5747.36	B	2	11.94	14.09	1½-2½	$3p^48^o-7s^4P$
						(35)
3467.8	C	(350)	11.96	12.95	2½-3½	$3p^2D^o-3d^2F$
3461.2	C	(300)	11.95	12.94	1½-2½	(36)
3582.3	C	(40)	11.96	12.94	2½-2½	
3074.1	C	(60)	11.96	12.98	2½-3½	$3p^2D^o-3d^2D$
1997.9	C	(30)	11.95	12.98	1½-1½	(37)
3107.4	C	(10)	11.96	12.98	2½-1½	
Strongest Unclassified Lines Attributed to N I						
2708.81	B	4				
4494.67	B	5				
492.40	B	7				
4358.27	B	10				
4736.48	B	5				
4317.70	B	5				
4313.11	B	4				
4305.46	B	6				
3999.98	B	4				
3869.10	B	4				
3650.19	B	5				
3532.65	B	4				

N II I P 29.49 Anal B List A Oct 1943

4895.30	C	4	17.80	20.32	2-1	$2p^3\ ^1D^o-3p^1P$ (1)
6379.63	C	5	18.39	20.32	1-1	$3s^3P^o-3p^1P$
6365.7	C	0	18.38	20.32	0-1	(2)
5679.56	C	10	18.40	20.58	2-3	$3s^3P^o-3p^3D$
5666.64	C	8	18.39	20.56	1-2	(3)
5676.02	C	6	18.38	20.56	0-1	
5710.76	C	6	18.40	20.56	2-2	
5686.21	C	8	18.39	20.56	1-1	
5730.67	C	2	18.40	20.56	2-1	
5045.098	C	8	18.40	20.85	2-1	$3s^3P^o-3p^3S$
5010.620	C	6	18.39	20.85	1-1	(4)
5002.692	C	2	18.38	20.85	0-1	
4630.537	A	10	18.40	21.07	2-2	$3s^3P^o-3p^3P$
4613.868	A	6	18.39	21.06	1-1	(5)
4643.086	A	8	18.40	21.06	2-1	
4621.392	A	7	18.39	21.06	1-0	
4601.478	A	8	18.39	21.07	1-2	
4607.153	A	7	18.38	21.06	0-1	
3955.851	A	6	18.39	21.51	1-2	$3s^3P^o-3p^1D$ (6)
3408.138	C	3	18.39	22.01	1-0	$3s^3P^o-3p^1S$ (7)
6482.07	C	8	18.42	20.32	1-1	$3s^1P^o-3p^1P$ (8)
5747.29	C	4	18.42	20.56	1-2	$3s^1P^o-3p^3D$
5767.43	C	3	18.42	20.58	1-1	(9)
5073.60	C	3	18.42	20.85	1-1	$3s^1P^o-3p^3S$ (10)
4654.57	C	2	18.42	21.07	1-2	$3s^1P^o-3p^3P$
4667.28	C	2	18.42	21.06	1-1	(11)
4674.98	C	2	18.42	21.06	1-0	
3994.996	A	10	18.42	21.51	1-2	$3s^1P^o-3p^1D$ (12)
3437.162	C	8	18.42	22.01	1-0	$3s^1P^o-3p^1S$ (13)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N II continued						
4564.78	C	1	20.32	23.02	1-2	$3p^1P-3d^3F^o$ (14)
4447.033	A	10	20.32	23.10	1-2	$3p^1P-3d^1D^o$ (15)
4375.00	C	0	20.32	23.14	1-2	$3p^1P-3d^3D^o$ (16)
3919.005	A	6	20.32	23.47	1-1	$3p^1P-3d^1P^o$ (17)
3006.86	C	7	20.32	24.43	1-1	$3p^1P-4s^1P^o$ (18)
*5005.140	C	10	20.58	23.04	3-4	$3p^3D-3d^3F^o$
5001.469	C	8	20.56	23.03	2-3	(19)
5001.128	C	7	20.56	23.02	1-2	
5035.665	C	6	20.58	23.03	3-3	
5016.387	C	5	20.56	23.02	2-2	
5040.76	C	0	20.58	23.02	3-2	
4803.272	C	6	20.58	23.15	3-3	$3p^3D-3d^3D^o$
4788.126	C	5	20.56	23.14	2-2	(20)
4779.710	C	4	20.56	23.14	1-1	
4810.286	C	2	20.58	23.14	3-2	
4793.656	C	2	20.56	23.14	2-1	
4781.168	C	2	20.56	23.15	2-3	
4774.232	C	2	20.56	23.14	1-2	
4507.559	A	3	20.58	23.31	3-2	$3p^3D-3d^3P^o$
4477.74	C	2	20.56	23.32	2-1	(21)
4459.96	C	1	20.56	23.32	1-0	
4488.15	C	0	20.56	23.31	2-2	
4465.54	C	0	20.56	23.32	1-1	
3328.79	C	4	20.58	24.28	3-2	$3p^3D-4s^3P^o$
3331.32	C	3	20.56	24.27	2-1	(22)
3330.30	C	2	20.56	24.26	1-0	
3318.14	C	2	20.56	24.28	2-2	
3324.58	C	2	20.56	24.27	1-1	
5383.82	C	0	20.85	23.14	1-2	$3p^3S-3d^3D^o$ (23)
5007.316	C	7	20.85	23.31	1-2	$3p^3S-3d^3P^o$
*4994.358	C	6	20.85	23.32	1-1	(24)
4987.377	C	4	20.85	23.32	1-0	
4709.45	C	1	20.85	23.47	1-1	$3p^3S-3d^1P^o$ (25)
3593.60	C	3	20.85	24.28	1-2	$3p^3S-4s^3P^o$
3609.09	C	2	20.85	24.27	1-1	(26)
3615.88	C	1	20.85	24.26	1-0	
6065.5	C	0	21.06	23.10	1-2	$3p^3P-3d^1D^o$ (27)
5941.67	C	8	21.07	23.15	2-3	$3p^3P-3d^3D^o$
5931.79	C	7	21.08	23.14	1-2	(28)
5937.82	C	4	21.06	23.14	0-1	
5952.39	C	3	21.07	23.14	2-2	
5940.25	C	2	21.06	23.14	1-1	
5960.93	C	0	21.07	23.14	2-1	
5495.70	C	5	21.07	23.31	2-2	$3p^3P-3d^3P^o$
5462.62	C	3	21.06	23.32	1-1	(29)
5480.10	C	3	21.07	23.32	2-1	
5454.26	C	2	21.06	23.32	1-0	
5478.13	C	2	21.06	23.31	1-2	
5452.12	C	2	21.06	23.32	0-1	
3838.39	C	5	21.07	24.28	2-2	$3p^3P-4s^3P^o$
3847.38	C	3	21.06	24.27	1-1	(30)
3856.07	C	3	21.07	24.27	2-1	
3855.08	C	2	21.08	24.26	1-0	
3829.80	C	3	21.06	24.28	1-2	
3843.30	C	3	21.08	24.27	0-1	
6610.58	C	6	21.51	23.37	2-3	$3p^1D-3d^1F^o$ (31)
6384.30	C	3	21.51	23.47	2-1	$3p^1D-3d^1P^o$ (32)
4227.749	A	3n	21.51	24.43	2-1	$3p^1D-4s^1P^o$ (33)
5104.45	C	2	22.01	24.43	0-1	$3p^1S-4s^1P^o$ (34)
3023.80	C	2	22.01	26.09	0-1	$3p^1S-4d^1P^o$ (35)
*6167.82	C	4	23.04	25.04	4-3	$3d^3F^o-4p^3D$
6173.40	C	3	23.03	25.03	3-2	(36)
6170.18	C	1	23.02	25.03	2-1	
8136.9	C	0	23.03	25.04	3-3	
6150.9	C	0	23.02	25.03	2-2	
6114.8	C	0	23.02	25.03	2-3	
4087.35	C	0n	23.03	26.05	3-3	$3d^3F^o-4f^1F$ (37)
4095.92	P		23.04	26.08	4-4	$3d^3F^o-4f^3F$
4082.85	C	00	23.03	26.05	3-3	(38)
4076.83	C	0n	23.02	26.05	2-2	
4082.280	A	2n	23.03	26.08	3-4	
4073.055	A	2n	23.02	26.05	2-3	
4041.321	A	5n	23.04	26.10	4-5	$3d^3F^o-4f^3G$
4043.537	A	3n	23.03	26.08	3-4	(39)
4035.087	A	4n	23.02	26.08	2-3	
4057.00	C	1	23.04	26.08	4-4	
4044.75	C	1	23.03	26.08	3-3	
4028.080	A	3n	23.03	26.10	3-4	$3d^3F^o-4f^1G$ (40)
6630.5	C	2	23.10	24.96	2-1	$3d^1D^o-4p^1P$ (41)
4176.164	A	3n	23.10	26.05	2-3	$3d^1D^o-4f^1F$ (42)
4171.608	A	2n	23.10	26.05	2-3	$3d^1D^o-4f^3F$ (43)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N II continued						
4110.00	C	0n	23.10	26.10	2-2	$3d^1D^o-4f^3D$ (44)
6504.9	C	2	23.15	25.04	3-3	$3d^3D^o-4p^3D$
6533.0	C	1	23.14	25.03	2-2	(45)
*6545.2	C	0	23.14	25.03	1-1	
			(23.15	25.03	3-2	
6493.0	C	0	23.14	25.04	2-3	
6528.3	C	0	23.14	25.03	1-2	
6340.67	C	4	23.15	25.09	3-2	$3d^3D^o-4p^3P$
			23.14	25.08	2-1	(46)
*6357.0	C	3	(23.14	25.08	1-0	
6328.6	C	1	23.14	25.09	2-2	
6347.1	C	1	23.14	25.08	1-1	
*4241.787	A	8n	23.14	26.05	2-3	$3d^3D^o-4f^1F$ (47)
*4241.787	A	8n	23.15	26.06	3-4	$3d^3D^o-4f^3F$
4237.049	A	4	23.14	26.05	2-3	(48)
4236.930	A	5	23.14	26.05	1-2	
4181.17	C	0n	23.15	26.10	3-4	$3d^3D^o-4f^1G$ (49)
4179.667	A	1n	23.15	26.10	3-3	$3d^3D^o-4f^3D$
4173.51	C	0n	23.14	26.10	2-2	(50)
*4156.8	C	0nn	23.14	26.11	1-1	
*4160.8	C	0nn	23.14	26.11	2-1	
4173.75	C	0n	23.14	26.10	2-3	
*4160.8	C	0nn	23.14	26.11	2-2	$3d^3D^o-4f^1D$
*4156.8	C	0nn	23.14	26.11	1-2	(51)
7139.8	B	3	23.31	25.04	2-3	$3d^3P^o-4p^3D$
7217.0	B	2	23.32	25.03	1-2	(52)
7259.3	B	2	23.32	25.03	0-1	
7188.7	B	0	23.31	25.03	2-2	
6942.9	B	3	23.31	25.09	2-2	$3d^3P^o-4p^3P$
7003.0	B	0n	23.32	25.08	1-1	(53)
6976.8	B	2	23.31	25.08	2-1	
*7015.3	B	1	23.32	25.08	1-0	
6967.6	B	1	23.32	25.09	1-2	
*7015.3	B	1	23.32	25.08	0-1	
6812.26	C	2	23.31	25.13	2-1	$3d^3P^o-4p^3S$
6836.2	C	1	23.32	25.13	1-1	(54)
4432.739	A	6n	23.31	26.10	2-3	$3d^3P^o-4f^3D$
4441.99	C	3n	23.32	26.10	1-2	(55)
4433.48	C	2n	23.32	26.11	0-1	
4431.82	C	0	23.31	26.10	2-2	
4427.97	C	2	23.32	26.11	1-1	
4427.21	C	2	23.32	26.11	1-2	$3d^3P^o-4f^1D$ (56)
6242.52	C	5	23.37	25.35	3-2	$3d^1F^o-4p^1D$ (57)
4552.536	A	4	23.37	26.08	3-4	$3d^1F^o-4f^3G$ (58)
4530.403	A	5	23.37	26.10	3-4	$3d^1F^o-4f^1G$ (59)
*6167.82	C	4	23.47	25.47	1-0	$3d^1P^o-4p^1S$ (60)
4694.55	C	3n	23.47	26.10	1-2	$3d^1P^o-4f^3D$ (61)
4677.93	C	3n	23.47	26.11	1-2	$3d^1P^o-4f^1D$ (62)
*5535.39	C	5	(25.38	27.61)	3-4	$3s^5P-3p^5D^o$
5530.27	C	4	(25.37	27.61)	2-3	(63)
5526.26	C	2	(25.37	27.60)	1-2	
5551.95	C	3	(25.38	27.61)	3-3	
5543.49	C	3	(25.37	27.60)	2-2	
*5535.39	C	5	(25.37	27.60)	1-1	
5565.30	C	0	(25.38	27.60)	3-2	
5552.54	B	00	(25.37	27.60)	2-1	
5540.16	C	1	(25.37	27.59)	1-0	
5013.026	C	2	(25.38	27.84)	3-3	$3s^5P-3p^5P^o$
*5005.140	C	10	(25.37	27.84)	2-2	(64)
4997.23	C	0	(25.37	27.84)	1-1	
5023.11	C	2	(25.38	27.84)	3-2	
5011.24	B	1	(25.37	27.84)	2-1	
*4994.358	C	6	(25.37	27.84)	2-3	
4991.22	C	2	(25.37	27.84)	1-2	
4145.764	A	3	(25.38	28.36)	3-2	$3s^5P-3p^5S^o$
4133.669	A	2	(25.37	28.36)	2-2	(65)
4124.081	A	1	(25.37	28.36)	1-2	
*5179.50	C	5	(27.61	29.99)	4-5	$3p^5D^o-3d^5F$
5175.89	C	3	(27.61	29.99)	3-4	(66)
5173.37	C	2	(27.60	29.99)	2-3	
			(27.60	29.98)	1-2	
*5172.32	C	1	(27.59	29.98)	0-1	
5190.42	C	2	(27.81	29.99)	4-4	
5184.97	C	2	(27.61	29.99)	3-3	
5180.34	B	1	(27.60	29.98)	2-2	
5199.50	B	00	(27.81	29.99)	4-3	
4860.35	C	2	(27.81	30.15)	4-3	$3p^5D^o-3d^5P$ (67)
4718.43	C	2	(27.61	30.23)	4-4	$3p^5D^o-3d^5D$
4709.45	C	1	(27.61	30.23)	3-3	(88)
4703.57	C	0	(27.60	30.22)	2-2	
4721.59	C	0	(27.61	30.23)	4-3	
4713.13	C	0	(27.61	30.22)	3-2	
4704.33	C	0	(27.60	30.22)	2-1	
4698.62	B	0	(27.60	30.22)	1-0	
4706.41	C	0	(27.61	30.23)	3-4	
4700.12	C	0	(27.60	30.23)	2-3	
4695.91	C	1	(27.60	30.22)	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N II continued						
5351.21	B	4	(27.84	30.15)	3-3	$3p^5P^o-3d^5P$
5327.45	B	0	(27.84	30.16)	2-2	(69)
5313.43	B	0	(27.84	30.16)	1-1	
5340.20	B	1	(27.84	30.16)	3-2	
*5320.96	B	3	(27.84	30.16)	2-1	
5338.66	B	2	(27.84	30.15)	2-3	
*5320.96	B	3	(27.84	30.16)	1-2	
*5179.50	C	5	(27.84	30.23)	3-4	$3p^5P^o-3d^5D$
5171.46	C	1	(27.84	30.23)	2-3	(70)
5168.24	C	1	(27.84	30.22)	1-2	
5183.21	C	2	(27.84	30.23)	3-3	
5174.46	C	1	(27.84	30.22)	2-2	
5170.08	C	1	(27.84	30.22)	1-1	
5186.17	B	0	(27.84	30.22)	3-2	
6888.7	B	2	(28.36	30.15)	2-3	$3p^5S^o-3d^5P$
6870.8	B	1	(28.36	30.16)	2-2	(71)
6857.6	B	1	(28.36	30.16)	2-1	

N III I P 47.24			Anal A		List A		Apr 1943
4097.31	A	10	27.32	30.33	1/2-1 1/2	$3^3S-3^3P^o$	
4103.37	A	9	27.32	30.33	1/2- 1/2	(1)	
4640.64	A	(10)	30.33	32.99	1 1/2-2 1/2	$3^3P^o-3^3D$	
4634.16	A	(9)	30.33	32.99	1/2-1 1/2	(2)	
4641.90	A	(7)	30.33	32.99	1 1/2-1 1/2		
4514.89	A	7	35.52	38.25	2 1/2-3 1/2	$3s^4P^o-3p^4D$	
			35.50	38.24	1 1/2-2 1/2	(3)	
*4510.92	A	6	(35.50	38.23	1/2-1 1/2		
4534.57	A	3	35.52	38.24	2 1/2-2 1/2		
4523.60	A	4	35.50	38.23	1 1/2-1 1/2		
4518.18	A	3	35.50	38.23	1/2- 1/2		
4547.34	A	0	35.52	38.23	2 1/2-1 1/2		
4530.84	A	1	35.50	38.23	1 1/2- 1/2		
3771.08	A	7	35.52	38.79	2 1/2-1 1/2	$3s^4P^o-3p^4S$	
3754.62	A	6	35.50	38.79	1 1/2-1 1/2	(4)	
3745.83	A	4	35.50	38.79	1/2-1 1/2		
3367.36	A	7	35.52	39.18	2 1/2-2 1/2	$3s^4P^o-3p^4P$	
3361.90	A	2	35.50	39.18	1 1/2-1 1/2	(5)	
3358.72	A	1	35.50	39.17	1/2- 1/2		
3374.06	A	6	35.52	39.18	2 1/2-1 1/2		
3365.79	A	3	35.50	39.17	1 1/2- 1/2		
3354.29	A	4	35.50	39.18	1 1/2-2 1/2		
3353.78	A	4	35.50	39.18	1/2-1 1/2		
4200.02	A	6	36.70	39.64	1 1/2-2 1/2	$3s^2P^o-3p^2D$	
4195.70	A	5	36.68	39.62	1/2-1 1/2	(6)	
4215.69	B	(3)	36.70	39.62	1 1/2-1 1/2		
3355.47	B	(2)	36.70	40.38	1 1/2- 1/2	$3s^2P^o-3p^2S$	
3342.77	B	(1)	36.68	40.38	1/2- 1/2	(7)	
3938.52	A	4	38.17	41.30	1 1/2-2 1/2	$3p^2P-3d^2D^o$	
3934.41	A	3	38.16	41.30	1/2-1 1/2	(8)	
3942.78	B	(1)	38.17	41.30	1 1/2-1 1/2		
*4867.18	A	5	38.25	40.79	3 1/2-4 1/2	$3p^4D-3d^4F^o$	
4861.33	A	4	38.24	40.78	2 1/2-3 1/2	(9)	
4858.88	A	3	38.23	40.77	1 1/2-2 1/2		
4858.74	A	2	38.23	40.77	1/2-1 1/2		
4884.14	A	1	38.25	40.78	3 1/2-3 1/2		
4873.58	A	3	38.24	40.77	2 1/2-2 1/2		
*4867.18	A	5	38.23	40.77	1 1/2-1 1/2		
4896.71	A	0	38.25	40.77	3 1/2-2 1/2		
4881.81	A	0	38.24	40.77	2 1/2-1 1/2		
4348.36	A	5	38.25	41.09	3 1/2-3 1/2	$3p^4D-3d^4D^o$	
4335.53	A	4	38.24	41.09	2 1/2-2 1/2	(10)	
4328.15	A	3	38.23	41.09	1 1/2-1 1/2		
*4323.93	A	2	38.23	41.08	1/2- 1/2		
4353.66	A	2	38.25	41.09	3 1/2-2 1/2		
4339.52	A	3	38.24	41.09	2 1/2-1 1/2		
4330.44	A	2	38.23	41.08	1 1/2- 1/2		
4330.14	A	2	38.24	41.09	2 1/2-3 1/2		
*4323.93	A	2	38.23	41.09	1 1/2-2 1/2		
4321.37	A	1	38.23	41.09	1/2-1 1/2		
3792.87	A	1	38.25	41.51	3 1/2-2 1/2	$3p^4D-3d^4P^o$	
3771.45	P		38.24	41.51	2 1/2-1 1/2	(11)	
3757.66	P		38.23	41.52	1 1/2- 1/2		
3779.23	P		38.24	41.51	2 1/2-2 1/2		
3762.62	P		38.23	41.51	1 1/2-1 1/2		
3752.65	P		38.23	41.52	1/2- 1/2		
3770.37	P		38.23	41.51	1 1/2-2 1/2		
3757.60	P		38.23	41.51	1/2-1 1/2		

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N III continued						
4544.80	B	(0)	38.48	41.20	1 1/2- 1/2	$4^2P^o-5^2S$
						(12)
4546.36	A	3	38.79	41.51	1 1/2-2 1/2	$3p^4S-3d^4P^o$
4535.11	A	2	38.79	41.51	1 1/2-1 1/2	(13)
4527.86	A	0	38.79	41.52	1 1/2- 1/2	
6466.86	A	4	39.18	41.09	2 1/2-3 1/2	$3p^4P-3d^4D^o$
6453.95	A	3	39.18	41.09	1 1/2-2 1/2	(14)
6445.05	A	2	39.17	41.09	1/2-1 1/2	
6478.69	A	2	39.18	41.09	2 1/2-2 1/2	
6463.03	A	2	39.18	41.09	1 1/2-1 1/2	
6450.78	A	2	39.17	41.08	1/2- 1/2	
6487.55	A	0	39.18	41.09	2 1/2-1 1/2	
6468.77	A	00	39.18	41.08	1 1/2- 1/2	
5314.45	A	2	39.18	41.51	2 1/2-2 1/2	$3p^4P-3d^4P^o$
5283.52	A	00	39.18	41.51	1 1/2-1 1/2	(15)
5260.91	A	1n	39.17	41.52	1/2- 1/2	
5298.93	A	1	39.18	41.51	2 1/2-1 1/2	
5272.60	A	1	39.18	41.52	1 1/2- 1/2	
5297.86	A	1	39.18	41.51	1 1/2-2 1/2	
5270.59	A	1	39.17	41.51	1/2-1 1/2	
4003.64	A	(4d)	39.23	42.31	2 1/2-3 1/2	$4^2D-5^2F^o$
3998.69	A	(3d)	39.23	42.31	1 1/2-2 1/2	(16)
4379.09	A	(10d)	39.54	42.36	—	$4^2F^o-5^2G$
						(17)

Unclassified Lines of **N III**

4294.76	A	0n
4290.80	A	3n
4290.55	A	1n
4288.72	A	1n
4288.21	A	0n
4284.51	A	1n
3173.97	A	3
3171.14	A	1

REVISED

See NSRDS-NBS 3, Section 4, 1971

N IV I P 77.09			Anal B		List A		Feb 1943
3478.69	A	7	(46.57	50.11)	1-2	$3^3S-3^3P^o$	
3482.98	A	5	(46.57	50.11)	1-1	(1)	
3484.90	A	3	(46.57	50.11)	1-0		
6383	P		48.00	49.94	0-1	$3^1S-3^1P^o$	
						(2)	
4057.80	B	2	49.98	52.98	1-2	$3^1P^o-3^1D$	
						(3)	
7123.10	A	5	(50.11	51.85)	2-3	$3^3P^o-3^3D$	
7109.46	A	3	(50.11	51.85)	1-2	(4)	
7103.28	A	1	(50.11	51.85)	0-1		
7127.21	A	1	(50.11	51.85)	2-2		
7111.28	A	1	(50.11	51.85)	1-1		
7129	P		(50.11	51.85)	2-1		
5245	P		(57.46	59.81)	2-3	$3s^3P^o-3p^3D$	
5236	P		(57.44	59.80)	1-2	(5)	
5281	P		(57.46	59.80)	2-2		
4528	P		(57.46	60.19)	2-1	$3s^3P^o-3p^3S$	
4495	P		(57.44	60.19)	1-1	(6)	
4479	P		(57.43	60.19)	0-1		
3463.36	B	1	(57.46	61.03)	2-2	$3s^3P^o-3p^3P$	
3454	P		(57.44	61.01)	1-1	(7)	
3474.56	B	0	(57.46	61.01)	2-1		
3461.34	B	0	(57.44	61.01)	1-0		
3443	P		(57.44	61.03)	1-2		
3445	P		(57.43	61.01)	0-1		
3747.66	B	0	58.44	61.69	1-2	$3s^1P^o-3p^1D$	
						(8)	
5734	P		59.36	61.52	1-2	$3p^1P-3d^1D^o$	
						(9)	
3824	P		59.36	62.59	1-1	$3p^1P-4^1P^o$	
						(10)	
4752	P		(59.81	62.41)	3-3	$3p^3D-3d^3D^o$	
4733	P		(59.80	62.41)	2-2	(11)	
4762	P		(59.81	62.41)	3-2		
4740	P		(59.80	62.40)	2-1		
4723	P		(59.80	62.41)	2-3		
3714	P		(59.81	63.14)	3-2	$3p^3D-3d^3P^o$	
3689	P		(59.80	63.14)	2-1	(12)	
3696	P		(59.80	63.14)	2-2		

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N IV continued						
5561	P		(60.19	62.41)	1-2	$3p^3S-3d^3D^o$
5571	P		(60.19	62.40)	1-1	(13)
4183	P		(60.19	63.14)	1-2	$3p^3S-3d^3P^o$
4174	P		(60.19	63.14)	1-1	(14)
5846	P		(61.03	63.14)	2-2	$3p^3P-3d^3P^o$
5794	P		(61.01	63.14)	1-1	(15)
5828	P		(61.03	63.14)	2-1	
5812	P		(61.01	63.14)	1-2	
6125	P		61.52	63.53	2-2	$3d^1D^o-4^1D$
						(16)
5073	P		61.69	64.12	2-1	$3p^1D-3d^1P^o$
						(17)

REVISED

See NSRDS-NBS 3, Section 4, 1971

N V I P 97.47			Anal A		List A		Dec 1944
4603.2	P		56.31	58.99	1/2-1 1/2	$3^2S-3^2P^o$	
4619.4	P		56.31	58.98	1/2- 1/2	(1)	
3161	P		83.74	87.64	- 1/2	$5^2P^o-6^2S$	
						(2)	
4335	P		87.64	90.49	1/2-	$6^2S-7^2P^o$	
						(3)	
5273	P		87.95	90.30	- 1/2	$6^2P^o-7^2S$	
						(4)	
4751	P		87.95	90.55	—	$6^2P^o-7^2D$	
						(5)	
5067	P		88.05	90.49	—	$6^2D-7^2P^o$	
						(6)	
4933	P		88.05	90.56	—	$6^2D-7^2F^o$	
						(7)	
4952	P		88.06	90.55	—	$6^2F^o-7^2D$	
						(8)	
4943	P		88.06	90.56	—	$6^2F^o-7^2G$ etc	
						(9)	
4945	P		88.06	90.56	—	$6^2G-7^2H^o$ etc	
						(10)	
6719	P		90.30	92.13	1/2-	$7^2S-8^2P^o$	
						(11)	
7330	P		90.49	92.17	—	$7^2P^o-8^2D$	
						(12)	

O I I P 13.56			Anal A		List B		Apr 1944
7771.96	A	27	9.11	10.69	2-3	$3^5S^o-3^5P$	
7774.18	A	26	9.11	10.69	2-2	(1)	
7775.40	A	25	9.11	10.69	2-1		
6726.25	A	5	9.11	10.94	2-2	$3^5S^o-3^3P$	
6726.50	A	2	9.11	10.94	2-1	(2)	
3947.301	E	10	9.11	12.23	2-3	$3^5S^o-4^5P$	
3947.489	E	7	9.11	12.23	2-2	(3)	
3947.594	E	4	9.11	12.23	2-1		
*8446.35	A	25	9.48	10.94	1-2	$3^3S^o-3^3P$	
8446.76	A	23	9.48	10.94	1-1	(4)	
*8446.35	A	25	9.48	10.94	1-0		
4368.30	D	(10)	9.48	12.31	1-	$3^3S^o-4^3P$	
						(5)	
3692.44	D	(7)	9.48	12.82	1-	$3^3S^o-5^3P$	
						(6)	
11302.22	B	15	10.69	11.79	3-2	$3^5P-4^5S^o$	
11297.54	B	10	10.69	11.79	2-2	(7)	
11294.97	B	5	10.69	11.79	1-2		
9265.99	A	16	10.69	12.03	3-	$3^5P-3^5D^o$	
9262.73	A	15	10.69	12.03	2-	(8)	
9260.88	A	14	10.69	12.03	1-		
6456.01	A	17	10.69	12.61	3-2	$3^5P-5^5S^o$	
6454.48	A	16	10.69	12.61	2-2	(9)	
6453.64	A	15	10.69	12.61	1-2		
6158.19	A	18	10.69	12.70	3-	$3^5P-4^5D^o$	
6156.78	A	17	10.69	12.70	2-	(10)	
6155.99	A	16	10.69	12.70	1-		
5436.83	D	(8)	10.69	12.96	3-2	$3^5P-6^5S^o$	
5435.76	D	(6)	10.69	12.96	2-2	(11)	
5435.16	D	(5)	10.69	12.96	1-2		

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
I continued						
5330.66	D	(10)	10.69	13.01	3-	$3^5P-5^5D^o$ (12)
5329.59	D	(7)	10.69	13.01	2-	
5328.98	D	(6)	10.69	13.01	1-	
5020.13	D	(5)	10.69	13.15	3-2	$3^5P-7^5S^o$ (13)
5019.34	D	(4)	10.69	13.15	2-2	
5018.78	D	(3)	10.69	13.15	1-2	
4968.76	D	(6)	10.69	13.18	3-	$3^5P-6^5D^o$ (14)
4967.86	D	(5)	10.69	13.18	2-	
4967.40	D	(4)	10.69	13.18	1-	
4803.00	D	(4)	10.69	13.26	3-2	$3^5P-8^5S^o$ (15)
4802.20	D	(3)	10.69	13.26	2-2	
4801.80	D	(2)	10.69	13.26	1-2	
4773.76	D	(5)	10.69	13.28	3-	$3^5P-7^5D^o$ (16)
4772.89	D	(4)	10.69	13.28	2-	
4772.54	D	(3)	10.69	13.28	1-	
4673.70	D	(3)	10.69	13,34	3-2	$3^5P-9^5S^o$ (17)
4672.75	D	(3d)	10.69	13.34	2-2	
			10.69	13.34	1-2	
4655.36	D	(4)	10.69	13.35	3-	$3^5P-8^5D^o$ (18)
4654.56	D	(3)	10.69	13.35	2-	
4654.23	D	(2)	10.69	13.35	1-	
7995.12	A	9	10.94	12.49	2-3	$3^3P-3s'\ ^3D^o$ (19)
7987.00	A	7	10.94	12.49	1-2	
7982.41	A	5	10.94	12.49	0-1	
7987.34	A	4	10.94	12.49	2-2	
7981.97	A	4	10.94	12.49	1-1	
*7254.47	A	17	10.94	12.64	2-1	$3^3P-5^3S^o$ (20)
7254.19	A	15	10.94	12.64	1-1	
*7254.47	A	17	10.94	12.64	0-1	
*7002.22	A	17	10.94	12.70	2-	$3^3P-4^3D^o$ (21)
7001.93	A	15	10.94	12.70	1-	
*7002.22	A	17	10.94	12.70	0-	
*6046.46	A	10	10.94	12.98	2-1	$3^3P-6^3S^o$ (22)
6046.26	A	8	10.94	12.98	1-1	
*6046.46	A	10	10.94	12.98	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O I continued						
*5958.63	A	9	10.94	13.01	2-	$3^3P-5^3D^o$ (23)
5958.46	A	7	10.94	13.01	1-	
*5958.63	A	9	10.94	13.01	0-	
5554.94	D	(6d)	10.94	13.16	2-1	$3^3P-7^3S^o$ (24)
5512.71	D	(5d)	10.94	13.18	2-	$3^3P-6^3D^o$ (25)
5299.00	D	(5)	10.94	13.27	2-1	$3^3P-8^3S^o$ (26)
5275.08	D	(4)	10.94	13.28	2-	$3^3P-7^3D^o$ (27)
*5146.06	D	(5)	10.94	13.34	2-1	$3^3P-9^3S^o$ (28)
*5130.53	D	(3)	10.94	13.35	2-	$3^3P-8^3D^o$ (29)
3954.887	C	10	10.94	14.06	2-2	$3^3P-3s''\ ^3P^o$ (30)
3952.982	C	1	10.94	14.06	1-1	
*3953.056	C	2	10.94	14.06	2-1	
3951.987	C	3	10.94	14.06	1-0	
3954.596	C	5	10.94	14.06	1-2	
*3953.056	C	2	10.94	14.06	0-1	
*6324.84	A	3	12.03	13.99	-3	$3^3D^o-3p'\ ^3D$ (31)
					-2	
6323.39	A	1	12.03	13.99	-1	
7025.52	A	3	12.31	14.06	-2	$4^3P-3s''\ ^3P^o$ (32)
4233.32	D	7	12.31	15.22	-2	$4^3P-3d'\ ^3P^o$ (33)
4222.78	D	5	12.31	15.23	-1	
4217.09	D	4	12.31	15.23	-0	
*8231.84	A	15	12.49	13.99	3-3	$3s'\ ^3D^o-3p'\ ^3D$ (34)
*8230.01	A	10	12.49	13.99	2-2	
8232.99	A	13	12.49	13.99	1-1	
*8231.84	A	15	12.49	13.99	3-2	
8227.64	A	11	12.49	13.99	2-1	
*8230.01	A	10	12.49	13.99	2-3	
8235.31	A	5	12.49	13.99	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O I continued						
7947.56	A	12	12.49	14.04	3-4	$3s'\ ^3D^o-3p'\ ^3F$ (35)
7950.83	A	10	12.49	14.04	2-3	
7952.18	A	9	12.49	14.04	1-2	
7943.15	A	6	12.49	14.04	3-3	
7947.204	C	3	12.49	14.04	2-2	
7939.49	A	1	12.49	14.04	3-2	
3823.469	C	10	12.49	15.71	3-3	$3s'\ ^3D^o-3p''\ ^3D$ (36)
3824.425	C	3	12.49	15.71	2-2	
3825.090	C	3	12.49	15.71	1-1	
3822.63	P		12.49	15.71	3-2	
3825.249	C	4	12.49	15.71	2-3	
3825.530	C	1	12.49	15.71	1-2	
8820.45	A	15	12.67	14.07	2-3	$3s'\ ^1D^o-3p'\ ^1F$ (37)
7156.80	A	12	12.67	14.40	2-2	$3s'\ ^1D^o-3p'\ ^1D$ (38)
*5146.06	D	(5)	12.82	15.22	-2	$5^3P-3d'\ ^3P^o$ (39)
*5130.53	D	(3)	12.82	15.23	-1	
5750.424	C	5	13.07	15.22	-2	$6^3P-3d'\ ^3P^o$ (40)
5731.103	C	3	13.07	15.23	-1	
5720.613	C	1	13.07	15.23	-0	
9156.02	A	4	13.99	15.33	3-4	$3p'\ ^3D-3d'\ ^3F^o$ (41)
*7706.77	A	5	13.99	15.59	3-2	$3p'\ ^3D-sp^5\ ^3P^o$ (42)
7663.45	A	3	13.99	15.60	2-1	
7639.99	A	1	13.99	15.60	1-0	
*7706.77	A	5	13.99	15.59	2-2	
7665.48	A	1	13.99	15.60	1-1	
6106.25	A	4	13.99	16.01	3-4	$3p'\ ^3D-4d'\ ^3P^o$ (43)
*5995.28	A	3	13.99	16.04	3-2	$3p'\ ^3D-4d'\ ^3P^o$ (44)
5991.93	A	2	13.99	16.05	2-1	
5991.34	A	1	13.99	16.05	1-0	
*5995.28	A	3	13.99	16.04	2-2	
5993.18	A	1	13.99	16.05	1-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O I continued						
9522.01	A	4	14.04	15.33	4-4	3p' ^{3}F-3d' ^{3}F° (45)
9499.39	A	0	14.04	15.34	4-4	3p' ^{3}F-3d' ^{1}G° (46)
9505.67	A	5	14.04	15.34	3-4	
*9498.04	A	8	14.04	15.34	4-5	3p' ^{3}F-3d' ^{3}G°† (47)
9487.49	A	6	14.04	15.34	3-4	
*9498.04	A	8	14.04	15.34	2-3	
6266.89	A	3	14.04	16.01	4-4	3p' ^{3}F-4d' ^{3}F° (48)
6264.55	A	3	14.04	16.01	3-4	3p' ^{3}F-4d' ^{1}G° (49)
*6261.55	A	6	14.04	16.01	4-5	3p' ^{3}F-4d' ^{3}G°† (50)
6256.84	A	4	14.04	16.01	3-4	
*6261.55	A	6	14.04	16.01	2-3	
*5410.76	F	(4)	14.04	16.32	4-4	3p' ^{3}F-5d' ^{3}F° (51)
*5410.76	F	(4)	14.04	16.32	3-4	3p' ^{3}F-5d' ^{1}G° (52)
5408.59	D	(4)	14.04	16.32	4-5	3p' ^{3}F-5d' ^{3}G° (53)
5404.87	F	(3)	14.04	16.32	3-4	
8426.326	C	4	14.06	15.53	2-3	3s" ^{3}P°-4p' ^{3}D (54)
8428.342	C	2	14.06	15.53	1-2	
8429.128	C	1	14.06	15.53	0-1	
8420.968	C	1	14.06	15.53	2-2	
8424.780	C	1	14.06	15.53	1-1	
7476.45	A	12	14.06	15.71	2-3	3s" ^{3}P°-3p" ^{3}D (55)
7479.06	A	8	14.06	15.71	1-2	
7480.66	A	8	14.06	15.71	0-1	
7473.23	A	5	14.06	15.71	2-2	
7477.21	A	7	14.06	15.71	1-1	
7471.36	A	2	14.06	15.71	2-1	
9760.65	A	5	14.07	15.34	3-4	3p' ^{1}F-3d' ^{1}G° (56)
9741.49	A	4	14.07	15.34	3-4	3p' ^{1}F-3d' ^{3}G° (57)
9677.41	A	1	14.07	15.35	3-3	3p' ^{1}F-3d' ^{1}F° (58)
6374.31	A	4	14.07	16.01	3-4	3p' ^{1}F-4d' ^{1}G° (59)
6366.33	A	3	14.07	16.01	3-4	3p' ^{1}F-4d' ^{3}G° (60)
6351.17	A	0	14.07	16.02	3-3	3p' ^{1}F-4d' ^{1}F° (61)
5492.8	F	(3)	14.07	16.32	3-4	3p' ^{1}F-5d' ^{1}G° (62)
5486.6	F	(3)	14.07	16.32	3-4	3p' ^{1}F-5d' ^{3}G° (63)
7886.31	A	4	14.31	15.88	1-2	3s" ^{1}P°-3p" ^{1}D (64)
6653.78	A	5	14.31	16.16	1-0	3s" ^{1}P°-3p" ^{1}S (65)

O II I P 35.00 Anal A List A Mar 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4649.139	A	10	22.90	25.55	2½-3½	3s^{4}P-3p^{4}D° (1)
4641.811	A	9	22.88	25.54	1½-2½	
4638.854	A	6	22.87	25.53	½-1½	
4676.234	A	8	22.90	25.54	2½-2½	
4661.635	A	9	22.88	25.53	1½-1½	
4650.841	A	6	22.87	25.52	½- ½	
4696.36	B	2	22.90	25.53	2½-1½	
4673.75	B	4	22.88	25.52	1½- ½	
4349.426	A	8	22.90	25.74	2½-2½	3s^{4}P-3p^{4}P° (2)
4338.865	A	6	22.88	25.73	1½-1½	
4325.77	B	3	22.87	25.72	½- ½	
4366.896	A	7	22.90	25.73	2½-1½	
4345.562	A	7	22.88	25.72	1½- ½	
4319.631	A	8	22.88	25.74	1½-2½	
4317.139	A	8	22.87	25.73	½-1½	
3749.49	B	9	22.90	26.19	2½-1½	3s^{4}P-3p^{4}S° (3)
3727.33	B	8	22.88	26.19	1½-1½	
3712.75	B	7	22.87	26.19	½-1½	
6721.35	B	5	23.34	25.18	1½- ½	3s^{2}P-3p^{3}S° (4)
6640.90	B	4	23.32	25.18	½- ½	
4414.909	A	10	23.34	26.14	1½-2½	3s^{2}P-3p^{2}D° (5)
4416.975	A	8	23.32	26.11	½-1½	
4452.377	A	6	23.34	26.11	1½-1½	
3973.263	A	10	23.34	26.45	1½-1½	3s^{2}P-3p^{2}P° (6)
3954.372	A	7	23.32	26.44	½- ½	
3982.719	A	5	23.34	26.44	1½- ½	
3945.048	A	5	23.32	26.45	½-1½	
3496.27	C	1	25.18	28.71	½-1½	3p^{2}s°-3d^{4}P (7)
3488.18	C	0	25.18	28.71	½- ½	
3474.94	B	1	25.18	28.73	½- ½	3p^{2}s°-3d^{4}D (8)
3390.25	B	8	25.18	28.82	½-1½	3p^{2}s°-3d^{2}P (9)
3377.20	B	7	25.18	28.83	½- ½	
4075.868	A	10	25.55	28.58	3½-4½	3p^{4}p°-3d^{4}F (10)
4072.164	A	8	25.54	28.57	2½-3½	
4069.897	A	6	25.53	28.56	1½-2½	
4069.636	A	4	25.52	28.55	½-1½	
4092.940	A	5	25.55	28.57	3½-3½	
4085.124	A	3	25.54	28.56	2½-2½	
4078.862	A	4	25.53	28.55	1½-1½	
4106.03	B	0	25.55	28.56	3½-2½	
4094.18	B	0	25.54	28.55	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O II continued						
3926.58	P		25.55	28.70	3½-2½	3p^{4}D°-3d^{4}P (11)
3896.30	B	1	25.54	28.71	2½-1½	
3872.45	B	1	25.53	28.71	1½- ½	
3907.45	B	4	25.54	28.70	2½-2½	
3882.45	B	1	25.53	28.71	1½-1½	
3864.13	C	1	25.52	28.71	½- ½	
3893.53	B	2	25.53	28.70	1½-2½	
3874.10	B	2	25.52	28.71	½-1½	
3882.197	A	7	25.55	28.73	3½-3½	3p^{4}D°-3d^{4}D (12)
3864.45	B	5	25.54	28.73	2½-2½	
3851.04	B	3	25.53	28.73	1½-1½	
3847.89	B	3	25.52	28.73	½- ½	
3883.15	B	3	25.55	28.73	3½-2½	
3864.68	B	1	25.54	28.73	2½-1½	
3856.16	B	5	25.53	28.73	1½- ½	
3863.50	B	2	25.54	28.73	2½-3½	
3850.81	B	2	25.53	28.73	1½-2½	
3842.82	B	3	25.52	28.73	½-1½	
3851.47	C	0	25.55	28.76	3½-3½	3p^{4}D°-3d^{2}F (13)
3857.18	B	4	25.54	28.74	2½-2½	
3875.82	B	4	25.55	28.74	3½-2½	
3833.10	B	3	25.54	28.76	2½-3½	
3843.58	B	3	25.53	28.74	1½-2½	
3134.82	B	10 l	25.55	29.49	3½-2½	3p^{4}D°-4s^{4}P (14)
3138.44	B	8 l	25.54	29.47	2½-1½	
3139.77	B	4 l	25.53	29.46	1½- ½	
3123.62	B	6 l	25.54	29.49	2½-2½	
3129.44	B	7 l	25.53	29.47	1½-1½	
3134.32	B	3 l	25.52	29.46	½- ½	
3113.71	B	1 l	25.53	29.49	1½-2½	
3124.02	B	2 l	25.52	29.47	½-1½	
4590.971	A	9	25.55	28.24	2½-3½	3s' ^{2}D-3p' ^{2}F° (15)
4596.174	A	8	25.55	28.24	1½-2½	
4351.269	A	6	25.55	28.39	2½-2½	3s' ^{2}D-3p' ^{2}D° (16)
4347.425	A	5	25.55	28.39	1½-1½	
3911.960	A	10	25.55	28.71	2½-1½	3s' ^{2}D-3p' ^{2}P° (17)
3919.287	A	6	25.55	28.70	1½- ½	
3912.088	B	2	25.55	28.71	1½-1½	
*4357.25	B	0	25.74	28.57	2½-3½	3p^{4}P°-3d^{4}F (18)
4169.230	A	4	25.74	28.70	2½-2½	3p^{4}P°-3d^{4}P (19)
4140.74	B	0	25.73	28.71	1½-1½	
4121.48	B	4	25.72	28.71	½- ½	
4156.54	B	3	25.74	28.71	2½-1½	
4129.34	B	2	25.73	28.71	1½- ½	
4153.302	A	7	25.73	28.70	1½-2½	
4132.806	A	6	25.72	28.71	½-1½	
4119.221	A	8	25.74	28.73	2½-3½	3p^{4}P°-3d^{4}D (20)
4104.743	A	5	25.73	28.73	1½-2½	
*4097.260	A	4n	25.72	28.73	½-1½	
4120.379	A	3	25.74	28.73	2½-2½	
4105.000	A	7	25.73	28.73	1½-1½	
4103.017	A	5	25.72	28.73	½- ½	
4120.554	A	2	25.74	28.73	2½-1½	
4110.795	A	3	25.73	28.73	1½- ½	
4084.66	B	1	25.74	28.76	2½-3½	3p^{4}P°-3d^{2}F (21)
4096.543	A	3	25.73	28.74	1½-2½	
4112.029	A	4	25.74	28.74	2½-2½	
3967.441	A	1	25.73	28.83	½- ½	3p^{4}P°-3d^{2}P (22)
3985.46	C	0	25.73	28.82	½-1½	
3287.59	B	9 l	25.74	29.49	2½-2½	3p^{4}P°-4s^{4}P (23)
3295.13	B	4 l	25.73	29.47	1½-1½	
3301.56	B	3 l	25.72	29.46	½- ½	
3305.15	B	6 l	25.74	29.47	2½-1½	
3306.60	B	6 l	25.73	29.46	1½- ½	
3277.69	B	7 l	25.73	29.49	1½-2½	
3290.13	B	5 l	25.72	29.47	½-1½	
4751.34	B	4	26.14	28.73	2½-3½	3p^{2}D°-3d^{4}D (24)
4710.04	B	5	26.11	28.73	1½-2½	
4752.70	B	2	26.14	28.73	2½-2½	
4705.355	A	8	26.14	28.76	2½-3½	3p^{2}P°-3d^{2}F (25)
*4699.21	B	7	26.11	28.74	1½-2½	
4741.71	B	3	26.14	28.74	2½-2½	
4395.95	B	7	26.14	28.94	2½-2½	3p^{2}D°-3d^{2}D (26)
4369.28	B	4	26.11	28.94	1½-1½	
4406.02	B	1	26.14	28.94	2½-1½	
4359.38	B	1	26.11	28.94	1½-2½	
3470.81	B	8	26.14	29.69	2½-1½	3p^{2}D°-4s^{2}P (27)
3470.42	B	5	26.11	29.67	1½- ½	
3447.98	B	5	26.11	29.69	1½-1½	
4924.60	B	6	26.19	28.70	1½-2½	3p^{4}S°-3d^{4}P (28)
4906.88	B	5	26.19	28.71	1½-1½	
4890.93	B	4	26.19	28.71	1½- ½	
4856.49	B	2	26.19	28.73	1½-2½	3p^{4}S°-3d^{4}D (29)
4856.76	C	2	26.19	28.73	1½-1½	
4864.95	B	3	26.19	28.73	1½- ½	
4845.01	B	1	26.19	28.74	1½-2½	3p^{4}S°-3d^{2}F (30)
3739.92	B	6 l	26.19	29.49	1½-2½	3p^{4}S°-4s^{4}P (31)
3762.63	B	5 l	26.19	29.47	1½-1½	
3777.60	B	4 l	26.19	29.46	1½- ½	
5306.73	B	5	26.45	28.82	1½-1½	3p^{2}P°-3d^{2}P (32)
5160.02	B	4	26.44	28.83	½- ½	
5176.00	B	2	26.45	28.83	1½- ½	
5190.56	B	3	26.44	28.82	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O II continued						
4943.06	B	7	26.45	28.94	1½-2½	3p^{2}P°-3d^{2}D (33)
4941.12	B	5	26.44	28.94	½-1½	
4955.78	B	3	26.45	28.94	1½-1½	
3803.14	B	6 l	26.45	29.69	1½-1½	3p^{2}P°-4s^{2}P (34)
3821.68	B	4 l	26.44	29.67	½- ½	
3830.45	B	4 l	26.45	29.67	1½- ½	
3794.48	B	3 l	26.44	29.69	½-1½	
4448.21	B	6	28.24	31.01	3½-3½	3p' ^{2}F°-3d' ^{2}F (35)
4443.05	B	5	28.24	31.01	2½-2½	
4189.788	A	10	28.24	31.18	3½-4½	3p' ^{2}F°-3d' ^{2}G (36)
4185.456	A	8	28.24	31.18	2½-3½	
4113.82	B	1	28.24	31.24	3½-2½	3p' ^{2}F°-3d' ^{2}D (37)
4110.20	B	1	28.24	31.24	2½-1½	
3741.69	C	0	28.24	31.54	3½-3½	3p' ^{2}F°-4d^{2}F (38)
3273.52	B	7 l	28.24	32.01	3½-2½	3p' ^{2}F°-4s' ^{2}D (39)
3270.98	B	7 l	28.24	32.01	2½-1½	
*4699.21	B	7	28.39	31.01	2½-3½	3p' ^{2}D°-3d' ^{2}F (40)
4703.18	B	3	28.39	31.01	1½-2½	
4698.48	C	1	28.39	31.01	2½-2½	
4327.48	B	3	28.39	31.24	2½-2½	3p' ^{2}D°-3d' ^{2}D (41)
4331.89	B	2	28.39	31.24	1½-1½	
4327.89	B	0	28.39	31.24	2½-1½	
4331.47	B	0	28.39	31.24	1½-2½	
4192.50	B	2	28.39	31.33	2½-1½	3p' ^{2}D°-3d' ^{2}P (42)
4196.72	B	1	28.39	31.33	1½- ½	
4196.26	C	00	28.39	31.33	1½-1½	
3963.13	B	0	28.39	31.50	2½-1½	3p' ^{2}D°-4d^{2}P (43)
3407.38	B	7 l	28.39	32.01	2½-	3p' ^{2}D°-4s' ^{2}D (44)
3409.84	B	6 l	28.39	32.01	1½-	
6895.29	C	5	28.58	30.37	4½-3½	3d^{4}F-4p^{4}D° (45)
6906.54	C	4	28.57	30.36	3½-2½	
6910.75	C	3	28.56	30.35	2½-1½	
6908.11	C	2	28.55	30.34	1½- ½	
6846.97	C	1	28.57	30.37	3½-3½	
6869.74	C	1	28.56	30.36	2½-2½	
6885.07	C	1	28.55	30.35	1½-1½	
4098.27	B	0n	28.55	31.56	1½-2½	3d^{4}F-4f^{2}D° (46)
4107.07	B	1n	28.56	31.57	2½-3½	3d^{4}F-4f^{4}D° (47)
4089.295	A	4n	28.58	31.60	4½-5½	3d^{4}F-4f^{4}G° (48)
*4097.260	A	4n	28.57	31.58	3½-4½	
4095.63	B	0n	28.56	31.57	2½-3½	
4087.16	B	2n	28.55	31.57	1½-2½	
4108.75	B	0n	28.57	31.57	3½-3½	
4096.18	C	0d	28.56	31.57	2½-2½	
4071.20	B	0	28.57	31.60	3½-4½	3d^{4}F-4f^{2}G° (49)
4083.907	A	2n	28.56	31.58	2½-3½	
4062.90	B	1n	28.58	31.62	4½-4½	3d^{4}F-4f^{4}F° (50)
4048.23	B	1n	28.57	31.62	3½-3½	
4041.31	C	0d	28.56	31.61	2½-2½	
4033.18	C	0d	28.55	31.61	1½-1½	
*4054.10	C	0d	28.57	31.61	3½-2½	
4046.15	C	00d	28.57	31.62	3½-4½	
4044.96	C	0d	28.57	31.62	3½-3½	3d^{4}F-4f^{2}F° (51)
4035.09	C	0d	28.56	31.62	2½-2½	
4026.40	B	0n	28.55	31.62	1½-2½	
3371.85	B	2n	28.58	32.24	4½-3½	3d^{4}F-5p^{4}D° (52)
3375.77	B	0	28.57	32.23	3½-2½	
3360.15	B	00n	28.57	32.24	3½-3½	
3367.00	B	00n	28.56	32.23	2½-2½	
3370.23	B	00n	28.55	32.22	1½-1½	
4317.65	C	0	28.71	31.56	1½-2½	3d^{4}P-4f^{2}D° (53)
4307.31	B	1n	28.71	31.58	½-1½	
4303.82	B	5n	28.70	31.57	2½-3½	3d^{4}P-4f^{4}D° (54)
4294.82	B	3n	28.71	31.58	1½-2½	
4281.40	B	0n	28.70	31.58	2½-2½	
4288.82	C	2d	28.71	31.59	1½-1½	
4288.83	B	1n	28.71	31.59	½- ½	
*4276.71	B	1n	28.71	31.59	1½- ½	
4291.25	B	1n	28.70	31.57	2½-3½	3d^{4}P-4f^{4}G° (55)
4305.53	B	0	28.71	31.57	1½-2½	
3013.37	B	3	28.70	32.79	2½-3½	3d^{4}P-5f^{4}D° (56)
4871.58	B	5	28.71	31.24	1½-2½	3p' ^{2}P°-3d' ^{2}D (57)
4861.03	B	3	28.70	31.24	½-1½	
4701.23	B	2	28.71	31.33	1½-1½	3p' ^{2}P°-3d' ^{3}P (58)
4691.47	B	1	28.70	31.33	½- ½	
4701.76	B	0	28.71	31.33	1½- ½	
4690.97	B	0	28.70	31.33	½-1½	
*4469.32	B	3	28.71	31.47	1½-2½	3p' ^{2}P°-4d^{4}D (59)
4414.37	C	1	28.71	31.50	1½-1½	3p' ^{2}P°-4d^{2}P (60)
4328.62	B	2	28.71	31.56	1½- ½	3p' ^{2}P°-3d' ^{2}S (61)
4319.93	B	1	28.70	31.56	½- ½	
3735.94	B	3	28.71	32.01	1½-2½	3p' ^{2}P°-4s' ^{2}D (62)
3729.34	B	2	28.70	32.01	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
II continued						
3334.29	B	0n	(28.73	31.58	2½-1½	$3d^4D-4f^3D^o$
			28.73	31.58	1½-1½	(63)
3357.25	B	0	28.73	31.56	1½-2½	
3358.40	B	0	28.73	31.57	3½-3½	$3d^4D-4f^4D^o$
3334.29	B	0n	28.73	31.58	2½-2½	(64)
3308.98	B	1n	28.73	31.59	½- ½	
3315.35	C	0d	28.73	31.59	1½- ½	
3357.25	B	0	28.73	31.57	2½-3½	
3315.35	C	0d	28.73	31.59	½-1½	
4332.78	B	1n	28.73	31.58	3½-4½	$3d^4D-4f^4G^o$
4344.42	B	0n	28.73	31.57	2½-3½	(65)
4331.13	C	0d	28.73	31.58	2½-3½	$3d^4D-4f^2G^o$ (66)
4275.52	B	4n	28.73	31.82	3½-4½	$3d^4D-4f^4F^o$
4276.71	B	1n	28.73	31.62	2½-3½	(87)
4283.98	B	1n	28.73	31.81	1½-2½	
4277.40	B	1n	28.73	31.61	½-1½	
4277.90	B	1n	28.73	31.82	3½-3½	
4283.13	C	0d	28.73	31.81	2½-2½	
4283.75	B	0n	28.73	31.61	1½-1½	
4274.13	C	00d	28.73	31.62	3½-3½	$3d^4D-4f^2F^o$
4278.21	C	0d	28.73	31.62	2½-2½	(68)
4277.40	B	1n	28.73	31.62	3½-2½	
4273.17	B	0n	28.73	31.62	2½-3½	
4275.90	C	0d	28.73	31.62	1½-2½	
3518.93	B	0n	28.73	32.24	3½-3½	$3d^4D-5p^4D^o$
3533.97	B	00n	28.73	32.23	3½-2½	(69)
3495.44	B	0n	28.73	32.26	3½-2½	$3d^4D-5p^4P^o$
3508.02	B	0n	28.73	32.25	2½-1½	(70)
3494.86	B	00n	28.73	32.26	2½-2½	
3501.67	B	00n	28.73	32.25	½-1½	
3453.31	B	0n	28.73	32.31	2½-1½	$3d^4D-5p^2D^o$ (71)
3039.76	B	1	28.73	32.79	3½-3½?	$3d^4D-5f^4D^o$
3039.51	B	1	28.73	32.79	2½-3½	(72)
3028.82	B	1	28.73	32.81	3½-4½	$3d^4D-5f^4G^o$ (73)
3007.08	B	3	28.73	32.84	3½-4½	$3d^4D-5f^4F^o$
3007.74	C	3dd	28.73	32.84	2½-3½	(74)
3008.28	B	1	28.73	32.84	3½-3½	
4343.36	C	0d	28.74	31.58	2½-2½?	$3d^2F-4f^4D^o$
4331.13	C	0d	28.74	31.59	2½-1½	(75)
4371.65	B	2n	28.76	31.58	3½-4½	$3d^2F-4f^4G^o$
4353.60	B	1n	28.74	31.57	2½-3½	(76)
4342.00	B	4n	28.76	31.60	3½-4½	$3d^2F-4f^2G^o$
4340.38	B	2n	28.74	31.58	3½-3½	(77)
4313.43	B	1n	28.78	31.62	3½-4½	$3d^2F-4f^4F^o$
4285.70	B	3n	28.74	31.62	2½-3½	(78)
4315.80	C	00d	28.78	31.62	3½-3½	
4293.33	B	0n	28.74	31.61	2½-2½	
4312.10	B	0n	28.78	31.62	3½-3½	$3d^2F-4f^2F^o$
4315.35	C	0d	28.76	31.62	3½-2½	(79)
3500.5	B	00n	28.74	32.28	3½-2½	$3d^2F-5p^4P^o$ (80)
3457.99	B	1n	28.76	32.33	3½-2½	$3d^2F-5p^2D^o$
3459.07	B	0n	28.74	32.31	2½-1½	(81)
3047.9	C	0dd	28.78	32.81	3½-4½	$3d^2F-5f^4G^o$ (82)
3032.08	B	2	28.78	32.83	3½-4½	$3d^2F-5f^2G^o$
3032.50	B	1	28.74	32.81	2½-3½	(83)
3025.75	B	1	28.76	32.84	3½-4½	$3d^2F-5f^4F^o$ (84)
6827.63	C	3	28.82	30.68	1½-1½	$3d^2P-4p^2P^o$
6878.19	C	0	28.83	30.68	½-1½	(85)
6666.94	C	1	28.83	30.67	1½- ½	
4491.25	B	3n	28.82	31.56	1½-2½	$3d^2P-4f^2D^o$
4489.48	B	1n	28.83	31.58	½-1½	(86)
4468.32	B	2n	28.82	31.58	1½-2½	$3d^2P-4f^4D^o$
4478.08	C	0d	28.83	31.59	½-1½	(87)
4477.88	B	2n	28.82	31.57	1½-2½	$3d^2P-4f^4G^o$ (88)
4707.80	C	0	28.94	31.56	2½-2½	$3d^2D-4f^2D^o$
4689.53	B	0	28.94	31.58	1½-1½	(89)
4689.33	C	0	28.94	31.58	1½-2½	$3d^2D-4f^4D^o$ (90)
4677.00	C	0	28.94	31.58	2½-3½	$3d^2D-4f^2G^o$ (91)
4613.87	C	1d	28.94	31.62	2½-3½	$3d^2D-4f^4F^o$
4610.14	B	3n	28.94	31.81	1½-2½	(92)
4631.38	C	0d	28.94	31.81	2½-2½	
4609.43	B	4n	28.94	31.82	2½-3½	$3d^2D-4f^2F^o$
4603.11	B	2n	28.94	31.62	1½-2½	(93)
4813.11	C	0d	28.94	31.62	2½-2½	
4465.40	B	4	(30.29	33.08)	2½-3½	$sp^3s^6s^o-sp^3p^6p$
4467.88	B	4	(30.29	33.06)	2½-2½	
4489.32	B	3	(30.29	33.08)	2½-1½	(94)
3785.01	B	0n	30.68	33.94	1½-2½?	$4p^2P^o-4d'\ ^2D$ (95)
3374.77	B	00	30.68	34.34	1½-2½	$4p^2P^o-5s'\ ^2D$ (96)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O II continued						
4060.58	B	3n	31.01	34.05	3½-4½	$3d'\ ^2F-4f'\ ^2G^o$
4060.98	B	2n	31.01	34.05	2½-3½	(97)
4054.10	C	0d	31.01	34.06	3½-3½	$3d'\ ^2F-4f'\ ^2F^o$
4054.55	C	00d	31.01	34.06	2½-2½	(98)
4024.04	B	1n	31.01	34.08	—	$3d'\ ^2F-4f'\ ^2D^o$ (99)
4302.81	C	0d	31.18	34.05	4½-4½	$3d'\ ^2G-4f'\ ^2G^o$
4303.08	C	0d	31.18	34.05	3½-3½	(100)
4353.74	C	4d	31.18	34.09	4½-5½	$3d'\ ^2G-4f'\ ^2H^o$
4353.98	C	4d	31.18	34.09	3½-4½	(101)
4378.41	C	0	31.24	34.06	2½-3½	$3d'\ ^2D-4f'\ ^2F^o$
4378.01	C	0	31.24	34.06	1½-2½	(102)
4343.36	C	0d	31.24	34.08	2½-2½	$3d'\ ^2D-4f'\ ^2D^o$
4342.83	C	1d	31.24	34.08	1½-1½?	(103)
4488.09	B	2n	31.33	34.08	1½-2½	$3d'\ ^2P-4f'\ ^2D^o$
4487.73	B	0n	31.33	34.08	½-1½	(104)
4843.38	B	1n	31.58	34.10	1½-	$3d'\ ^2G-4f'\ ^2F^o$ (105)
4146.09	B	3	(33.06	36.03)	3½-4½	$sp^3p^6p-sp^3d^6p^o$
4143.77	B	2	(33.06	38.03)	2½-3½	
4142.34	B	0	(33.08	38.03)	1½-2½	(108)
4145.90	B	0	(33.06	38.03)	3½-3½	
4143.52	B	1	(33.08	36.03)	2½-2½	
4141.96	C	1	(33.06	36.03)	1½-1½	
4142.08	C	1	(33.06	38.04)	1½- ½	
3218.10	C	2	(33.08	36.89)	3½-2½	$sp^3p^6p-sp^3s^6s^o$
3216.76	C	1	(33.06	36.89)	2½-2½	
3218.08	C	0	(33.08	36.89)	1½-2½	(107)

Strongest Unclassified Lines Attributed to O II

4506.50	B	2n				
3430.61	B	3n				
3419.87	B	2n				
3081.46	B	2n				
3006.82	B	3				
3008.04	B	2				
3005.62	B	2				

O III I P 54.71 Anal B List A Sept 1943

4239.5	A	00	33.01	35.92	1-1	$3s^3P^o-3p^1P$ (1)
3759.87	A	9	33.04	36.32	2-3	$3s^3P^o-3p^3D$
3754.87	A	7	33.01	38.29	1-2	(2)
3757.21	A	5	32.99	38.28	0-1	
3791.26	A	6	33.04	38.29	2-2	
3774.00	A	6	33.01	36.28	1-1	
3810.96	A	2	33.04	38.28	2-1	
3340.74	A	6	33.04	36.73	2-1	$3s^3P^o-3p^3S$
3312.30	A	5	33.01	38.73	1-1	(3)
3299.36	A	3	32.99	36.73	0-1	
3047.13	A	8	33.04	37.09	2-2	$3s^3P^o-3p^3P$
3035.43	A	4	33.01	37.07	1-1	(4)
3059.30	A	6	33.04	37.07	2-1	
3043.02	A	5	33.01	37.08	1-0	
3023.45	A	5	33.01	37.09	1-2	
3024.57	A	4	32.99	37.07	0-1	
5592.37	A	6	33.71	35.92	1-1	$3s^1P^o-3p^1P$ (5)
2983.78	A	9	33.71	37.85	1-2	$3s^1P^o-3p^1D$ (8)
2983.66	A	1	35.92	40.05	1-2	$3p^1P-3d^3F^o$ (7)
3285.48	A	10	36.32	40.10	3-4	$3p^3D-3d^3F^o$
3260.98	A	8	36.29	40.08	2-3	(8)
3267.31	A	5	36.28	40.05	1-2	
3284.57	A	4	36.32	40.08	3-3	
3281.94	A	3	36.29	40.05	2-2	
3305.77	A	0	36.32	40.05	3-2	
3252.94	A	2	38.29	40.09	2-2	$3p^3D-3d^1D^o$
3238.57	A	5	36.28	40.09	1-2	(9)
3017.63	A	5	36.32	40.41	3-3	$3p^3D-3d^3D^o$
3004.35	A	4	36.29	40.40	2-2	(10)
2996.51	A	3	36.28	40.40	1-1	
3024.36	A	1	36.32	40.40	3-2	
3008.79	A	3	36.29	40.40	2-1	
2997.71	A	2	36.29	40.41	2-3	
2992.11	A	2	36.28	40.40	1-2	
3363.83	A	1	36.73	40.40	1-2	$3p^3S-3d^3D^o$
3369.40	A	00	36.73	40.40	1-1	(11)
3132.86	A	8	38.73	40.87	1-2	$3p^3S-3d^3P^o$
3121.71	A	5	36.73	40.89	1-1	(12)
3115.73	A	4	36.73	40.69	1-0	
3440.39	A	4	36.82	40.41	2-3?	$2p^4\ ^1D-3d^3D^o$ (13)
3715.08	A	8	37.09	40.41	2-3	$3p^3P-3d^3D^o$
3707.24	A	8	37.07	40.40	1-2	(14)
3702.75	A	5	37.08	40.40	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O III continued						
3725.30	A	3	37.09	40.40	2-2	$3p^3P-3d^3D^o$
3714.03	A	2	37.07	40.40	1-1	(14)
3732.13	A	1	37.09	40.40	2-1	cont
3444.10	A	5	37.09	40.67	2-2	$3p^3P-3d^3P^o$
3415.39	A	3	37.07	40.69	1-1	(15)
3430.60	A	4	37.09	40.69	2-1	
3408.13	A	1	37.07	40.69	1-0	
3428.87	A	3	37.07	40.67	1-2	
3405.74	A	2	37.06	40.69	0-1	
5508.11	A	1	37.85	40.09	2-2	$3p^1D-3d^1D^o$ (16)
3981.59	A	8	37.85	40.96	2-3	$3p^1D-3d^1F^o$ (17)
3818.75	A	1	37.85	41.08	2-1	$3p^1D-3d^1P^o$ (18)
5268.06	A	2	38.74	41.08	0-1	$3p^1S-3d^1P^o$ (19)
3034.32	A	0	41.08	45.15	1-1	$3d^1P^o-4p^1P$ (20)
3703.37	A	5	41.78	45.11	3-4	$3s^5P-3p^5D^o$
3898.70	A	5	41.76	45.10	2-3	(21)
3695.37	A	4	41.74	45.08	1-2	
3720.86	A	3	41.78	45.10	3-3	
3718.48	A	2	41.76	45.08	2-2	
3704.73	A	3	41.74	45.08	1-1	
3734.80	A	1	41.78	45.08	3-2	
3721.95	A	1	41.76	45.08	2-1	
3709.52	A	2	41.74	45.07	1-0	
3350.99	A	4	41.78	45.46	3-3	$3s^5P-3p^5P^o$
3344.28	A	2	41.76	45.45	2-2	(22)
3338.78	A	3	41.74	45.44	1-1	
3362.38	A	4	41.78	45.45	3-2	
3350.68	A	3	41.76	45.44	2-1	
3333.00	A	4	41.76	45.46	2-3	
3330.40	A	4	41.74	45.45	1-2	
4081.10	A	1	43.24	46.27	2-3	$3s^3P-3p^3D^o$
4073.90	A	0	43.22	46.25	1-2	(23)
3556.92	A	1	43.24	46.71	2-2	$3s^3P-3p^3P^o$ (24)
3455.12	A	5	45.11	48.68	4-5	$3p^5D^o-3d^5F$
3450.94	A	4	45.10	48.67	3-4	(25)
3448.05	P	0+	45.08	48.66	2-3	
3446.73	A	3	45.08	48.66	1-2	
3447.22	A	1	45.07	48.65	0-1	
3466.15	A	3	45.11	48.67	4-4	
3459.98	A	3	45.10	48.66	3-3	
3454.90	A	3	45.08	48.86	2-3	
3451.33	A	1	45.08	48.65	1-1	
3468.90	A	0	45.10	48.68	3-3	
3459.52	A	0	45.08	48.65	2-1	
3088.04	A	2	45.11	49.11	4-4	$3p^5D^o-3d^5D$
3083.65	B	1	45.10	49.10	3-3	(26)
3075.19	B	0	45.08	49.10	2-2	
3095.81	B	00	45.11	49.10	4-3	
3084.63	B	0	45.10	49.10	3-2	
3074.68	B	00	45.08	49.10	2-1	
3068.06	B	00	45.08	49.10	1-0	
3075.95	B	0	45.10	49.11	3-4	
3074.15	B	0	45.08	49.10	2-3	
3068.68	B	0	45.08	49.10	1-2	
3065.01	B	00	45.07	49.10	0-1	
3384.95	A	4	45.46	49.11	3-4	$3p^5P^o-3d^5D$
3382.69	A	3	45.45	49.10	2-3	(27)
3394.36	A	1	45.46	49.10	3-3	
3383.85	A	2	45.45	49.10	2-2	
3376.82	C	(1)	45.44	49.10	1-1	
3355.92	A	3	45.46	49.14	3-3	$3p^5P^o-3d^5P$
3336.78	A	3	45.45	49.15	2-2	(28)
3326.16	A	0	45.44	49.15	1-1	
3348.05	A	2	45.46	49.15	3-2	
3333.49	A	1	45.45	49.15	2-1	
3344.28	A	2	45.45	49.14	2-3	
3330.40	A	4	45.44	49.15	1-2	
3279.97	C	(1)	46.05	49.82	0-1	$4p^1S-5d^1P^o$ (29)
3728.82	C	(1)	46.27	49.58	3-4	$3p^3D^o-3d^3F$
3738.49	C	(0)	46.25	49.56	2-3	(30)
3729.70	A	1	46.24	49.55	1-2	
3215.97	B	1	46.27	50.11	3-3	$3p^3D^o-3d^3D$
3207.12	P		46.25	50.10	2-2	(31)
3200.95	A	1	46.24	50.10	1-1	
4529.7	A	00	46.37	49.10	2-3	$3p^5S^o-3d^5D$ (32)
4461.56	A	1	46.37	49.14	2-3	$3p^5S^o-3d^5P$
4447.82	P	0+	46.37	49.15	2-2	(33)
4440.1	A	0	46.37	49.15	2-1	
4555.30	A	0	46.71	49.42	2-2	$3p^3P^o-3d^3P$ (34)
3638.70	A	3	46.71	50.11	2-3	$3p^3P^o-3d^3D$
3646.84	A	2	46.72	50.10	1-2	(35)
3653.00	A	1	46.72	50.10	0-1	
3645.20	A	1	46.71	50.10	2-2	
3650.70	A	0	46.72	50.10	1-1	
3649.20	A	00	46.71	50.10	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O III continued						
4569.50	A	1n	52.63	55.33	2–3?	$3p^1D^o$–$3d^1F$ (36)
4474.95	A	1n	52.63	55.39	2–2?	$3p^1D^o$–$3d^1D$ (37)
O IV I P 77.08 Anal B List A Mar 1943						
3063.46	B	6	44.15	48.18	½–1½	3^2S–3^2P^o
3071.66	B	5	44.15	48.17	½– ½	(1)
3411.76	B	4	48.18	51.79	1½–2½	3^2P^o–3^2D
3403.58	B	3	48.17	51.79	½–1½	(2)
3413.71	A	1	48.18	51.79	1½–1½	
3385.55	B	(6)	54.19	57.84	2½–3½	$3s^4P^o$–$3p^4D$
3381.28	B	(4)	54.16	57.81	1½–2½	(3)
3381.33	P		54.14	57.79	½–1½	
3409.75	B	(2)	54.19	57.81	2½–2½	
3396.83	B	(2)	54.16	57.79	1½–1½	
3390.37	P		54.14	57.78	½– ½	
3425.57	B	(0)	54.19	57.79	2½–1½	
3405.97	P		54.16	57.78	1½– ½	
3349.11	A	3	55.93	59.62	1½–2½	$3s^2P^o$–$3p^2D$
3348.08	A	2	55.90	59.59	½–1½	(4)
3378.09	A	0	55.93	59.59	1½–1½	
3052.54	A	1	55.93	59.97	1½– ½	$3s^2P^o$–$3p^2S$
3028.04	A	0	55.90	59.97	½– ½	(5)
*3736.78	B	(4)	57.84	61.14	3½–4½	$3p^4D$–$3d^4F^o$
3729.03	B	(3)	57.81	61.12	2½–3½	(6)
*3725.81	B	(2)	57.79 57.78	61.11 61.10	1½–2½ ½–1½	
3758.45	B	(0)	57.84	61.13	3½–3½	
3744.73	B	(0)	57.81	61.11	2½–3½	
3736.78	B	(4)	57.79	61.10	1½–1½	
3774.38	P		57.84	61.11	3½–3½	
3755.82	P		57.81	61.10	2½–1½	
3209.64	B	(3)	57.84	61.68	3½–3½	$3p^4D$–$3d^4D^o$
3194.75	B	(1)	57.81	61.67	2½–3½	(7)
3185.72	B	(0)	57.79	61.67	1½–1½	
3180.72	B	(0)	57.78	61.66	½– ½	
3216.31	P		57.84	61.67	3½–3½	
3199.53	B	(1)	57.81	61.67	2½–1½	
3188.65	P		57.79	61.66	1½– ½	
3188.17	P		57.81	61.68	2½–3½	
3180.98	P		57.79	61.67	1½–2½	
3177.80	B	(0)	57.78	61.67	½–1½	
3375.50	B	(3)	58.54	62.20	1½–2½	$3p^4S$–$3d^4P^o$
3362.63	P		58.54	62.31	1½–1½	(8)
3354.31	A	—	58.54	62.22	1½– ½	
4798.25	B	(5)	59.11	61.68	2½–3½	$3p^4P$–$3d^4D^o$
4783.43	B	(4)	59.09	61.67	1½–2½	(9)
4772.57	B	(2)	59.08	61.67	½–1½	
4813.07	B	(1)	59.11	61.67	2½–2½	
4794.22	B	(2)	59.09	61.67	1½–1½	
4779.09	B	(2)	59.08	61.66	½– ½	
4823.93	P		59.11	61.67	2½–1½	
4800.77	P		59.09	61.66	1½– ½	
3995.17	B	(2)	59.11	62.20	2½–2½	$3p^4P$–$3d^4P^o$
3956.82	P		59.09	62.21	1½–1½	(10)
3930.63	P		59.08	62.23	½– ½	
3977.10	B	(1)	59.11	62.21	2½–1½	
3945.29	P		59.09	62.22	1½– ½	
3974.66	P		59.09	62.20	1½–2½	
3942.14	B	(0)	59.08	62.21	½–1½	
5362.4	P		59.62	61.92	2½–2½	$3p^2D$–$3d^2D^o$
5305.3	P		59.59	61.91	1½–1½	(11)
3563.36	A	2	59.62	63.08	2½–3½	$3p^2D$–$3d^2F^o$
3560.42	A	1	59.59	63.05	1½–2½	(12)
3520.9	P		59.97	63.48	½–1½	$3p^2S$–$3d^2P^o$
3502.3	P		59.97	63.50	½– ½	(13)
3489.84	C	1	64.03	67.57	1½–2½	$3s'\ ^2P^o$–$3p'\ ^2D$
3492.24	C	0	64.03	67.57	½–1½	(14)
4568	P		68.20	70.91	—	5^2F^o–6^2D (15)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O V I P 113.38 Anal B List A Feb 1943						
5114	P		69.29	71.70	0–1	3^1S–3^1P^o (1)
3144.58	A	1	71.70	75.63	1–2	3^1P^o–3^1D (2)
5600	P		(71.92	74.13)	2–3	3^3P^o–3^3D
5582	P		(71.91	74.12)	1–2	(3)
5573	P		(71.91	74.12)	0–1	
5606	P		(71.92	74.12)	2–2	
5584	P		(71.91	74.12)	1–1	
5608	P		(71.92	74.12)	2–1	
4123.90	A	2	(80.63	83.62)	2–3	$3s^3P^o$–$3p^3D$
4120	P		(80.58	83.58)	1–2	(4)
4123	P		(80.56	83.56)	0–1	
4179	P		(80.63	83.58)	2–2	
4151	P		(80.58	83.56)	1–1	
4211	P		(80.63	83.56)	2–1	
3275.67	A	0	(80.63	84.39)	2–1	$3s^3P^o$–$3p^3S$
3239	P		(80.58	84.39)	1–1	(5)
3222	P		(80.56	84.39)	0–1	
3058.68	A	0	82.03	86.07	1–2	$3s^1P^o$–$3p^1D$ (6)
4554.28	A	0	83.04	85.75	1–2	$3p^1P$–$3d^1D^o$ (7)
3747	P		(83.62	86.91)	3–3	$3p^3D$–$3d^3D^o$
3717	P		(83.58	86.90)	2–3	(8)
3701	P		(83.56	86.89)	1–1	
3762	P		(83.62	86.90)	3–2	
3726	P		(83.58	86.89)	2–1	
3703	P		(83.58	86.91)	2–3	
3693	P		(83.56	86.90)	1–2	
3298	P		(83.62	87.36)	3–2	$3p^3D$–$3d^3P^o$
3349	P		(83.58	87.38)	2–1	(9)
3322	P		(83.56	87.39)	1–0	
3264	P		(83.58	87.36)	2–2	
3230	P		(83.56	87.38)	1–1	
3245	P		(83.56	87.36)	1–2	
4925	P		(84.39	86.90)	1–2	$3p^3S$–$3d^3D^o$
4940	P		(84.39	86.89)	1–1	(10)
4158.76	A	0	(84.39	87.36)	1–2	$3p^3S$–$3d^3P^o$
4135.9	P		(84.39	87.38)	1–1	(11)
4121.7	P		(84.39	87.39)	1–0	
6830	P		(85.11	86.91)	2–3	$3p^3P$–$3d^3D^o$
6790	P		(85.08	86.90)	1–2	(12)
6767	P		(85.07	86.89)	0–1	
6878	P		(85.11	86.90)	2–2	
6819	P		(85.08	86.89)	1–1	
6909	P		(85.11	86.89)	2–1	
5473	P		(85.11	87.36)	2–2	$3p^3P$–$3d^3P^o$
5376	P		(85.08	87.38)	1–1	(13)
5432	P		(85.11	87.38)	2–1	
5352	P		(85.08	87.39)	1–0	
5417	P		(85.08	87.36)	1–2	
5343	P		(85.07	87.38)	0–1	
6329	P		86.07	88.02	2–3	$3p^1D$–$3d^1F^o$ (14)
4522	P		86.07	88.79	2–1	$3p^1D$–$3d^1P^o$ (15)
3702	P		88.79	92.13	1–2	$3d^1P^o$–4^1D (16)
7438	P		(89.15	90.81)	—	4^3S–4^3P^o (17)
O VI I P 137.52 Anal A List A Feb 1943						
3811.35	A	2	79.01	82.25	½–1½	3^2S–3^2P^o
3834.24	A	1	79.01	82.23	½– ½	(1)
3068	P		123.46	127.49	½–	6^2S–7^2P^o (2)
3622	P		123.84	127.25	—	6^2P^o–7^2S (3)
3314	P		123.84	127.57	—	6^2P^o–7^2D (4)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
O VI continued						
3509	P		123.97	127.49	—	6^2D–7^2P^o (5)
3436	P		123.97	127.57	—	6^2D–7^2P^o (6)
3438	P		123.98	127.57	—	6^2F^o–7^2D (7)
3433	P		123.98	127.57	—	6^2F^o–7^2G (8)
3434	P		123.98	127.57	—	6^2G–7^2H^o etc (9)
4751	P		127.25	129.85	½–	7^2S–8^2P^o (10)
5602	P		127.49	129.69	–½	7^2P^o–8^2S (11)
5112	P		127.49	129.90	—	7^2P^o–8^2D (12)
5410	P		127.57	129.85	—	7^2D–8^2P^o (13)
5279	P		127.57	129.90	—	7^2D–8^2F^o (14)
5298	P		127.57	129.90	—	7^2F^o–8^2D (15)
5289	P		127.57	129.90	—	7^2F^o–8^2G (16)
5292	P		127.57	129.90	—	7^2G–8^2F^o (17)
5291	P		127.57	129.90	—	7^2G–8^2H^o etc (18)
F I I P 17.35 Anal C List D May 1944						
7398.68	A	17	12.64	14.31	2½–2½	$3s^4P$–$3p^4P^o$
7482.72	A	11	12.68	14.33	1½–1½	(1)
7514.93	A	9	12.70	14.34	½– ½	
7331.95	A	15	12.64	14.33	2½–1½	
7425.64	A	14	12.68	14.34	1½– ½	
7552.24	A	14	12.68	14.31	1½–2½	
7573.41	A	14	12.70	14.33	½–1½	
6856.02	A	16	12.64	14.44	2½–3½	$3s^4P$–$3p^4D^o$
6903.46	A	15	12.68	14.46	1½–2½	(2)
6909.82	A	13	12.70	14.48	½–1½	
6773.97	A	11	12.64	14.46	2½–3½	
6834.26	A	12	12.68	14.48	1½–1½	
6870.22	A	13	12.70	14.49	½– ½	
6708.27	A	7	12.64	14.48	2½–1½	
6795.53	A	9	12.68	14.49	1½– ½	
6239.64	A	16	12.64	14.62	2½–1½	$3s^4P$–$3p^4S^o$
6348.50	A	15	12.68	14.62	1½–1½	(3)
6413.66	A	14	12.70	14.62	½–1½	
7754.70	A	19	12.93	14.52	1½–2½	$3s^2P$–$3p^2D^o$
7800.32	A	18	12.97	14.55	½–1½	(4)
7607.17	A	15	12.93	14.55	1½–1½	
7311.02	A	13	12.93	14.62	1½– ½	$3s^2P$–$3p^2S^o$
7489.14	A	8	12.97	14.62	½– ½	(5)
7037.45	A	15	12.93	14.68	1½–1½	$3s^2P$–$3p^2P^o$
7127.88	A	14	12.97	14.70	½– ½	(6)
6966.35	A	10	12.93	14.70	1½– ½	
7202.37	A	13	12.97	14.68	½–1½	
F II I P 34.84 Anal B List D May 1944						
3847.086	A	20	(21.81	25.02)	2–3	$3s^5S^o$–$3p^5P$
3849.987	A	15	(21.81	25.01)	2–2	(1)
3851.667	A	10	(21.81	25.01)	2–1	
4024.727	A	20	22.57	25.64	1–2	$3s^3S^o$–$3p^3P$
4025.495	A	15	22.57	25.64	1–1	(2)
4025.010	A	10	22.57	25.64	1–0	
3505.614	A	15	(25.02	28.54)	3–4	$3p^5P$–$3d^5D^o$ †
3503.095	A	12	(25.01	28.54)	2–3	(3)
3502.954	A	8	(25.01	28.54)	2–2	
3501.416	A	10	(25.01	28.54)	1–0	
4103.525	A	15	25.64	28.65	2–3	$3p^3P$–$3d^3D^o$ †
4103.085	A	10	25.64	28.65	1–2	(4)
4103.724	A	7	25.64	28.65	0–1	
4103.871	A	7	25.64	28.65	2–2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
F II continued						
4109.173	A	8	26.15	29.16	3-3	$3s^1\ ^3D^o$-$3p^1\ ^3D$†
4116.547	A	7	26.16	29.16	2-2	(5)
4119.219	A	7	26.16	29.16	1-1	
3541.765	A	9	26.15	29.64	3-2	$3s^1\ ^3D^o$-$3p^1\ ^3P$†
3536.838	A	7	26.16	29.65	2-1	(6)
4299.177	A	10	26.55	29.42	2-3	$3s^1\ ^1D^o$-$3p^1\ ^1F$ (7)
3302.740	A	10	26.55	30.40	2-2	$3s^1\ ^1D^o$-$3p^1\ ^1D$ (8)
4246.16	A	15n	(28.54	31.44)	—	$3d^5D^o$-$4f^5F$ (9)
4447.18	A	12n	28.65	31.42	3-	$3d^3D^o$-$4f^3F$†
4446.71	A	10n	28.65	31.42	2-	(10)
3640.891	A	9	29.32	32.71	4-4	$3p^1\ ^3F$-$3d^1\ ^3F^o$†
3641.985	A	8	29.32	32.71	-3	(11)
3642.798	A	7	29.32	32.71	-2	
F III I P 62.39 Anal A List D May 1944						
3121.515	A	12	39.16	43.12	2½-3½	$3s^4P$-$3p^4D^o$
3115.669	A	10	39.12	43.08	1½-2½	(1)
3113.579	A	8	39.10	43.06	½-1½	
3146.962	A	8	39.16	43.08	2½-2½	
3134.208	A	8	39.12	43.06	1½-1½	
3124.762	A	8	39.10	43.05	½- ½	
3165.86	P		39.16	43.06	2½-1½	
3145.536	A	4	39.12	43.05	1½- ½	
3174.125	A	12	40.11	43.99	1½-2½	$3s^2P$-$3p^2D^o$
3174.725	A	10	40.06	43.95	½-1½	(2)
3213.972	A	6	40.11	43.95	1½-1½	
3039.254	A	7	46.94	51.00	2½-3½	$3p^1\ ^2D^o$-$3d^1\ ^2F$
3039.746	A	6	46.95	51.01	1½-2½	(3)
3034.54	A	1.5	46.94	51.01	2½-2½	
3154.387	A	4	47.46	51.38	1½-2½	$3p^1\ ^2P^o$-$3d^1\ ^2D$
3142.777	A	3	47.45	51.38	½-1½	(4)
3156.11	B	0	47.46	51.38	1½-1½	
F IV See Introduction						
F VI See Introduction						

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne I I P 21.47 Anal A List C May 1944						
7032.4127	A	(10)	16.55	18.30	2-1	3s 1°-3p 1
6402.2455	B	(20)	16.55	18.48	2-3	(1) -3p 2
6334.4279	A	(10)	16.55	18.50	2-2	-3p 3
6217.2813	A	(15)	16.55	18.53	2-1	-3p 4
6143.0623	A	(12)	16.55	18.56	2-2	-3p 5
5975.5340	A	(12)	16.55	18.61	2-1	-3p 7
5944.8342	A	(10)	16.55	18.62	2-2	-3p 8
5881.8950	A	(20)	16.55	18.65	2-1	-3p 9
3472.5711	C	(10)	16.55	20.10	2-3	3s 1°-4p 2
3369.9081	C	(15)	16.55	20.21	2-1	(2) -4p 9
3369.8086	C	(10)	16.55	20.21	2-2	-4p 8
7245.1668	B	(10)	16.60	18.30	1-1	3s 2°-3p 1
6506.5279	A	(15)	16.60	18.50	1-2	(3) -3p 3
6382.9914	A	(12)	16.60	18.53	1-1	-3p 4
6074.3377	A	(10)	16.60	18.63	1-0	-3p 6
6029.9971	A	(10)	16.60	18.65	1-1	-3p 9
5400.5620	B	(50)	16.60	18.88	1-0	-3p 10
3417.9036	C	(10)	16.60	20.21	1-2	3s 2°-4p 8 (4)
6266.4950	A	(15)	16.64	18.61	0-1	3s 3°-3p 7
6163.5939	A	(12)	16.64	18.65	0-1	(5) -3p 9
8082.4580	B	200	16.78	18.30	1-1	3s 4°-3p 1
7173.9389	B	(10)	16.78	18.50	1-2	(6) -3p 3
7024.0508	B	(9)	16.78	18.53	1-1	-3p 4
6929.4678	B	(10)	16.78	18.56	1-2	-3p 5
6678.2764	A	(9)	16.78	18.62	1-2	-3p 8
6598.9529	A	(15)	16.78	18.65	1-1	-3p 9
5852.4878	A	(50)	16.78	18.88	1-0	-3p 10
3593.5259	C	(10)	16.78	20.21	1-2	3s 4°-4p 8
3520.4717	C	(20)	16.78	20.28	1-0	(7) -4p 10
9665.426	D	1000	18.30	19.58	1-2	3p 1-4s 1°
9486.680	B	500	18.30	19.60	1-1	(8)-4s 2°
8988.58	D	200	18.30	19.68	1-0	-4s 3°
8865.759	B	500	18.30	19.69	1-1	-4s 4°
5343.284	B	(12)	18.30	20.61	1-0	3p 1-4d 1°
5341.096	B	(20)	18.30	20.61	1-1	(9)-4d 2°
5330.779	B	(12)	18.30	20.62	1-2	-4d 5°
4827.338	B	(10)	18.30	20.86	1-1	3p 1-6s 2° (10)
4710.058	E	(10)	18.30	20.92	1-0	3p 1-5d 1°
4708.854	B	(12)	18.30	20.92	1-1	(11)-5d 2°
4704.395	B	(15)	18.30	20.93	1-2	-5d 5°
4537.751	B	(10)	18.30	21.02	1-2	-5d 9°
8377.6068	B	800	18.48	19.95	3-4	3p 2-3d 3°
8376.41	D	200	18.48	19.95	3-3	(12)-3d 4°
8300.3258	B	600	18.48	19.96	3-3	-3d 8°

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne I continued						
5764.419	B	(15)	18.48	20.62	3-4	3p 2-4d 3°
5748.299	B	(10)	18.48	20.62	3-3	(13)-4d 8°
5037.7505	B	(10)	18.48	20.93	3-4	3p 2-5d 3° (14)
4788.9258	B	(12)	18.48	21.05	3-2	3p 2-7s 1° (15)
4715.344	B	(15)	18.48	21.09	3-4	3p 2-6d 3°
4712.060	E	(10)	18.48	21.09	3-3	(16)-6d 8°
4540.376	B	(10)	18.48	21.19	3-4	3p 2-7d 3° (17)
8495.3600	B	500	18.50	19.95	2-3	3p 3-3d 4°
8418.4274	B	400	18.50	19.96	2-2	(18)-3d 7°
7943.1802	B	200	18.50	20.05	2-3	-3d 10°
5820.155	B	(10)	18.50	20.62	2-3	3p 3-4d 4°
5804.4488	B	(10)	18.50	20.62	2-2	(19)-4d 7°
5562.769	B	(10)	18.50	20.71	2-3	-4d 10°
*4884.915	B	(10)	18.50	21.02	2-3	3p 3-5d 10° (20)
4752.7313	B	(10)	18.50	21.09	2-3	3p 3-6d 4° (21)
10798.12	F	150	18.53	19.68	1-0	3p 4-4s 3° (22)
8704.15	D	200	18.53	19.95	1-2	3p 4-3d 5°
8681.920	B	500	18.53	19.95	1-1	(23)-3d 6°
8634.6480	B	600	18.53	19.96	1-2	-3d 7°
8136.4060	B	300	18.53	20.05	1-2	-3d 9°
5656.6585	B	(10)	18.53	20.71	1-2	3p 4-4d 9° (24)
4957.0334	B	(10)	18.53	21.02	1-2	3p 4-5d 11° (25)
10844.54	F	200	18.56	19.69	2-1	3p 5-4s 4° (26)
8919.50	D	300	18.56	19.94	2-1	3p 5-3d 2°
8853.867	B	700	18.56	19.95	2-2	(27)-3d 5°
8780.6223	B	1200	18.56	19.96	2-3	-3d 8°
8266.076	B	250	18.56	20.05	2-3	-3d 10°
5974.628	B	(10)	18.56	20.62	2-3	3p 5-4d 8°
5719.3254	B	(10)	18.56	20.71	2-3	(28)-4d 10°
5005.160	B	(10)	18.56	21.02	2-3	3p 5-5d 10° (29)
9226.67	D	200	18.61	19.95	1-2	3p 7-3d 5°
9201.76	D	600	18.61	19.95	1-1	(30)-3d 6°
9148.68	D	600	18.61	19.96	1-2	-3d 7°
8591.2584	B	400	18.61	20.05	1-2	-3d 9°
5872.828	B	(10)	18.61	20.71	1-2	3p 7-4d 9° (31)
4790.218	B	(10)	18.61	21.19	1-2	3p 7-6d 11° (32)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne I continued						
9373.28	D	200	18.62	19.94	2-1	3p 8-3d 2°
9313.98	D	300	18.82	19.95	2-3	(33)-3d 4°
9300.85	D	600	18.62	19.95	2-2	-3d 5°
9221.59	D	200	18.62	19.96	2-2	-3d 7°
9220.05	D	400	18.62	19.96	2-3	-3d 8°
8654.51	D	400	18.62	20.05	2-2	-3d 9°
8654.3835	B	1500	18.62	20.05	2-3	-3d 10°
8647.05	D	300	18.62	20.05	2-2	-3d 11°
5145.011	E	(10)	18.62	21.02	2-2	3p 8-5d 11°
5144.9376	B	(10)	18.62	21.02	2-3	(34)-5d 10°
*4884.915	B	(10)	18.62	20.57	2-1	3p 8-5s 4° (35)
9425.38	D	500	18.63	19.94	0-1	3p 6-3d 2°
9326.52	D	600	18.63	19.95	0-1	(36)-3d 6°
8679.491	B	500	18.63	20.05	0-1	3p 6-3d 12° (37)
9547.40	D	300	18.65	19.94	1-0	3p 9-3d 1°
9534.17	D	500	18.65	19.94	1-1	(38)-3d 2°
9459.21	D	300	18.65	19.95	1-2	-3d 5°
8783.755	B	1000	18.65	20.05	1-2	-3d 11°
8771.70	D	400	18.65	20.05	1-1	-3d 12°
5965.474	B	(10)	18.65	20.71	1-2	3p 9-4d 11° (39)
10562.43	F	200	18.88	20.05	0-1	3p 10-3d 12° (40)

For changes in Paschen's notation see text § 37

Ne II I P 40.91	Anal A	List A	June 1944	J	Multiplet (No)
3694.22	A	10	27.05	30.39	2½-3½	3s⁴P-3p⁴P°
3734.94	A	7	27.12	30.42	1½-1½	(1)
3751.26	A	5	27.15	30.44	½- ½	
3664.09	A	9	27.05	30.43	2½-1½	
3709.64	A	7	27.12	30.44	1½- ½	
3766.29	A	8	27.12	30.39	1½-2½	
3777.16	A	8	27.15	30.42	½-1½	
3334.87	A	10	27.05	30.75	2½-3½	3s⁴P-3p⁴P°
3355.05	A	7	27.12	30.79	1½-2½	(2)
3360.63	A	5	27.15	30.83	½-1½	
3297.74	A	7	27.05	30.79	2½-2½	
3327.16	A	5	27.12	30.83	1½-1½	
3344.43	A	5	27.15	30.84	½- ½	
3270.79	A	2	27.05	30.83	2½-1½	
3311.30	A	3	27.12	30.84	1½- ½	
3135.82	A	1	27.05	30.99	2½-3½	3s⁴P-3p²D°
3187.60	A	2	27.12	30.99	1½-2½	(3)
3001.65	A	6	27.12	31.23	1½-1½	3s⁴P-3p⁴S° †
3028.84	A	4	27.15	31.23	½-1½	(4)
3713.09	A	10	27.66	30.99	1½-2½	3s²P-3p²D°
3727.08	A	9	27.74	31.05	½-1½	(5)
3643.89	A	5	27.66	31.05	1½-1½	
3481.96	A	6	27.66	31.21	1½- ½	3s²P-3p²S°
3557.84	A	4	27.74	31.21	½- ½	(8)
3323.75	A	7	27.66	31.38	1½-1½	3s²P-3p²P°
3378.28	A	5	27.74	31.39	½- ½	(7)
3309.78	A	3	27.66	31.39	1½- ½	
3392.78	A	5	27.74	31.38	½-1½	
3034.48	A	5	30.39	34.46	2½-3½	3p⁴P°-3d⁴D
3047.57	A	6	30.42	34.47	1½-2½	(8)
3054.69	A	5	30.44	34.48	½-1½	
3027.04	A	4	30.39	34.47	2½-2½	
3037.73	A	4	30.42	34.48	1½-1½	
3045.58	A	4	30.44	34.50	½- ½	
3017.34	A	3	30.39	34.48	2½-1½	
3568.53	A	6	30.42	33.88	2½-3½	3s' ²D-3p' ²F°
3574.64	A	5	30.42	33.87	1½-2½	(9)
3574.23	A	0	30.42	33.87	2½-2½	
3345.49	A	3	30.42	34.11	2½-1½	3s' ²D-3p' ²P°
3319.75	A	3	30.42	34.14	1½- ½	(10)
*3345.88	A	1	30.42	34.11	1½-1½	
3230.16	A	5	30.42	34.24	2½-2½	3s' ²D-3p' ²D°
3233.38	A	3	30.42	34.24	1½-1½	(11)
3231.97	A	0	30.42	34.24	2½-1½	
3329.20	A	4	30.75	34.46	3½-3½	3p⁴D°-3d⁴D
3357.90	A	3	30.79	34.47	2½-2½	(12)
3374.10	A	3	30.83	34.48	1½-1½	
3379.39	A	1	30.84	34.50	½- ½	
3320.29	A	2	30.75	34.47	3½-2½	
*3345.88	A	1	30.79	34.48	2½-1½	
3362.89	A	2	30.83	34.50	1½- ½	
3367.05	P		30.79	34.48	2½-3½	
3386.24	A	2	30.83	34.47	1½-2½	
3390.56	A	2	30.84	34.48	½-1½	
3218.21	A	8	30.75	34.59	3½-4½	3p⁴D°-3d⁴F
3198.62	A	5	30.79	34.65	2½-3½	(13)
3190.86	A	2	30.83	34.69	1½-2½	
3213.70	A	3	30.84	34.68	½-1½	
3164.46	A	3	30.75	34.65	3½-3½	
3165.70	A	4	30.79	34.69	2½-2½	
3198.88	P		30.83	34.68	1½-1½	
3132.22	A	2	30.75	34.69	3½-2½	
3173.58	A	3	30.79	34.68	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne II continued						
3208.99	A	2	30.75	34.60	3½-3½	3p⁴D°-3d²F
3188.74	A	3	30.79	34.66	2½-2½	(14)
3154.82	A	1	30.75	34.66	3½-2½	
3244.15	A	5	30.79	34.60	2½-3½	
3214.38	A	5	30.83	34.66	1½-2½	
3243.34	A	2	30.79	34.60	2½-2½	3p⁴D°-3d²D
3248.15	A	3dr	30.83	34.62	1½-1½	(15)
3269.86	A	3	30.83	34.60	1½-2½	
3263.43	A	3	30.84	34.62	½-1½	
3118.02	A	4	30.75	34.71	3½-2½	3p⁴D°-3d⁴P
3169.30	A	0	30.79	34.69	2½-1½	(16)
3151.16	A	2	30.79	34.71	2½-2½	
3194.61	A	4	30.83	34.69	1½-1½	
3176.16	A	3	30.83	34.71	1½-2½	
3209.38	A	3	30.84	34.69	½-1½	
3039.65	A	3	30.75	34.81	3½-2½	3p⁴D°-4s⁴P
3035.98	A	3	30.79	34.86	2½-1½	(17)
3030.85	A	2	30.83	34.90	1½- ½	
3071.08	A	2	30.79	34.81	2½-2½	
3059.16	A	3	30.83	34.86	1½-1½	
3044.16	A	2	30.84	34.90	½- ½	
*3072.68	A	1d	30.84	34.86	½-1½	
3554.39	A	1	30.99	34.46	2½-3½	3p²D°-3d⁴D (18)
3367.20	A	6	30.99	34.65	2½-3½	3p²D°-3d⁴F
3388.46	A	6	31.05	34.69	1½-2½	(19)
3330.78	A	2	30.99	34.69	2½-2½	
3417.71	A	5	30.99	34.60	2½-3½	3p²D°-3d²F
3414.82	A	2	31.05	34.66	1½-2½	(20)
3356.35	A	2	30.99	34.66	2½-2½	
3416.87	A	4	30.99	34.60	2½-2½	3p²D°-3d²D
3453.10	A	3	31.05	34.62	1½-1½	(21)
3477.69	A	3	31.05	34.60	1½-2½	
3314.60	A	1	30.99	34.71	2½-2½	3p²D°-3d⁴P
3371.87	A	4	31.05	34.71	1½-2½	(22)
3255.39	A	2	30.99	34.78	2½-1½	3p²D°-3d²P
3353.63	A	2	31.05	34.73	1½- ½	(23)
3310.55	A	1	31.05	34.78	1½-1½	
3094.08	A	4	30.99	34.98	2½-1½	3p²D°-4s²P
3088.23	A	3	31.05	35.05	1½- ½	(24)
3143.74	A	2	31.05	34.98	1½-1½	
3551.52	A	1	31.21	34.68	½-1½	3p²S°-3d⁴F (25)
3613.35	A	3	31.21	34.62	½-1½	3p²S°-3d²D (26)
3546.22	A	1	31.21	34.69	½-1½	3p²S°-3d⁴P (27)
3456.68	A	4dr*	31.21	34.78	½-1½	3p²S°-3d²P
3503.81	A	5	31.21	34.73	½- ½	(28)
3275.20	A	2	31.21	34.98	½-1½	3p²S°-4s²P (29)
3806.30	A	2	31.23	34.47	1½-2½	3p⁴S°-3d⁴D
3790.96	A	1	31.23	34.48	1½-1½	(30)
3561.23	A	4	31.23	34.89	1½-2½	3p⁴S°-3d⁴F
3571.28	A	4	31.23	34.68	1½-1½	(31)
3590.47	A	2	31.23	34.66	1½-2½	3p⁴S°-3d²F (32)
3659.93	A	3	31.23	34.60	1½-2½	3p⁴S°-3d²D
3632.75	A	2	31.23	34.62	1½-1½	(33)
3543.90	A	7	31.23	34.71	1½-2½	3p⁴S°-3d⁴P
3565.84	A	4	31.23	34.69	1½-1½	(34)
3594.18	A	4	31.23	34.88	1½- ½	
3475.25	A	1	31.23	34.78	1½-1½	3p⁴S°-3d²P
3522.72	A	1	31.23	34.73	1½- ½	(35)
3442.12	A	1	31.23	34.81	1½-2½	3p⁴S°-4s⁴P
3397.90	A	1	31.23	34.86	1½-1½	(38)
3721.88	A	2	31.38	34.69	1½-2½	3p²P°-3d⁴F (37)
3753.83	A	5	31.38	34.66	1½-2½	3p²P°-3d²F (38)
3829.77	A	7	31.38	34.60	1½-2½	3p²P°-3d²D
3818.44	A	6	31.39	34.82	½-1½	(39)
3800.02	A	5	31.38	34.62	1½-1½	
3701.81	A	4	31.38	34.71	1½-2½	3p²P°-3d⁴P
3744.86	A	4	31.39	34.89	½-1½	(40)
3828.08	A	4	31.38	34.78	1½-1½	3p²P°-3d²P
3697.09	A	2	31.39	34.73	½- ½	(41)
3879.80	A	2	31.38	34.73	1½- ½	
3644.88	A	4	31.39	34.78	½-1½	
3428.78	A	5	31.38	34.98	1½-1½	3p²P°-4s²P
3377.23	A	2	31.39	35.05	½- ½	(42)
3443.70	A	2	31.39	34.98	½-1½	
3229.50	A	3	33.88	37.70	3½-4½	3p' ³P°-3d' ²G
3224.83	A	4	33.87	37.70	2½-3½	(43)
3097.15	A	3	33.88	37.86	3½-2½	3p' ³P°-3d' ²D
3092.91	A	2	33.87	37.88	2½-2½	(44)
3411.38	A	1	34.11	37.72	1½-1½	3p' ³P°-3d' ³P
3440.80	A	1	34.14	37.72	½- ½	(45)
3413.13	A	3	34.11	37.72	1½- ½	
3438.97	A	2	34.14	37.72	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne II continued						
3336.12	A	2	34.11	37.81	1½-1½	3p' ²P°-3d' ²D (46)
3141.35	A	3	34.11	38.04	1½-2½	3p' ²P°-3d' ²F (47)
3050.57	A	1	34.11	38.15	1½- ½	3p' ²P°-3d' ²G
*3072.68	A	1d	34.14	38.15	½- ½	(48)
3480.75	A	2	34.16	37.70	½-1½	sp⁴(¹S)3s²g-
3479.53	A	1	34.16	37.70	½- ½	sp⁴(¹S)3p²P° (49)
3542.28	A	2	34.24	37.72	2½-1½	3p' ²P°-3d' ²P
3537.99	A	3	34.24	37.72	1½- ½	(50)
3539.94	A	½	34.24	37.72	1½-1½	
3406.88	A	5	34.24	37.86	2½-2½	3p' ²P°-3d' ²D
3457.16	P	4dr*	34.24	37.81	1½-1½	(51)
3459.38	A	2	34.24	37.81	2½-1½	
3404.77	A	4	34.24	37.86	1½-2½	
4219.76	A	6	34.46	37.38	3½-3½	3d⁴D-4f⁴D°
4231.60	A	4	34.47	37.39	2½-2½	(52)
4239.95	A	2	34.48	37.39	1½-1½	
4242.20	A	1	34.50	37.40	½- ½	
4217.15	A	3	34.46	37.39	3½-2½	
4220.92	A	2	34.47	37.39	2½-1½	
4224.57	A	1	34.48	37.40	1½- ½	
4250.68	A	4	34.48	37.39	1½-2½	
4257.82	A	3	34.50	37.39	½-1½	
4206.43	A	2	34.46	37.39	3½-4½	3d⁴D-4f⁴F°
4080.48	A	2d	34.48	37.51	1½-2½	(53)
4150.67	A	3	34.50	37.47	½-1½	
4098.77	A	4	34.46	37.47	3½-3½	
4062.90	A	3	34.47	37.51	2½-2½	
4133.65	A	3	34.48	37.47	1½-1½	
4118.10	A	0	34.48	37.48	1½-2½	3d⁴D-4f⁴G°
4100.30	A	1d	34.47	37.48	2½-2½	(54)
4086.69	A	1	34.46	37.48	3½-2½	
4412.54	A	2	34.59	37.38	4½-3½	3d⁴F-4f⁴D°
4514.80	A	2	34.65	37.39	3½-2½	(55)
4535.47	A	3	34.68	37.40	1½- ½	
4517.79	A	2	34.65	37.38	3½-3½	
4553.16	A	4	34.68	37.39	1½-1½	
4565.49	A	1	34.68	37.39	1½-2½	
4397.94	A	6	34.59	37.39	4½-4½	3d⁴F-4f⁴F°
4379.50	A	6	34.65	37.47	3½-3½	(56)
4385.00	A	2	34.69	37.51	2½-2½	
4430.90	A	4	34.68	37.47	1½-1½	
4446.46	A	3	34.69	37.47	2½-1½	
4502.52	A	½	34.65	37.39	3½-4½	
4442.87	A	3	34.69	37.47	2½-3½	
4369.77	A	5	34.68	37.51	1½-2½	
4390.40	A	8	34.59	37.46	4½-5½	3d⁴F-4f⁴G°
4391.94	A	7	34.85	37.46	3½-4½	(57)
4409.30	A	7	34.89	37.49	2½-3½	
*4413.20	A	4	34.68	37.48	1½-2½	
*4438.54	A	6	34.69	37.48	2½-2½	
4365.72	A	2	34.65	37.48	3½-2½	
4534.66	A	2	34.66	37.39	2½-2½	3d²F-4f⁴D° (58)
4341.42	A	2	34.66	37.51	2½-2½	3d²F-4f⁴F° (59)
4384.08	A	1	34.66	37.48	2½-2½	3d²F-4f⁴G° (80)
4468.91	A	5	34.82	37.39	1½-2½	3d²D-4f⁴D°
*4438.54	A	6	34.60	37.39	2½-2½	(81)
4456.95	A	5	34.62	37.39	1½-1½	
4416.77	A	2	34.60	37.39	2½-1½	
4439.95	A	2	34.62	37.40	1½- ½	
4244.17	A	0	34.60	37.51	2½-2½	3d²D-4f⁴F°
4339.78	A	1	34.62	37.47	1½-1½	(62)
4322.66	A	1	34.62	37.48	1½-2½	3d²D-4f⁴G° (63)
*4615.98	A	4	34.71	37.38	2½-3½	3d⁴P-4f⁴D°
4574.49	A	1	34.69	37.39	1½-2½	(64)
4613.89	A	1	34.71	37.39	2½-2½	
4582.05	A	1	34.69	37.39	1½-1½	
4498.94	A	5	34.66	37.40	½- ½	
4600.11	A	1	34.71	37.39	2½-1½	
4544.11	A	1	34.89	37.40	1½- ½	
4471.52	A	3	34.71	37.47	2½-3½	3d⁴P-4f⁴F°
4377.95	A	2	34.89	37.51	1½-2½	(85)
*4413.20	A	4	34.71	37.51	2½-2½	
4438.30	A	3	34.69	37.47	1½-1½	
4475.22	A	1	34.71	37.47	2½-1½	
4421.38	A	3	34.89	37.48	1½-2½	3d⁴P-4f⁴G° (86)
4732.53	A	1	34.78	37.39	1½-2½	3d²P-4f⁴D°
4634.73	A	2	34.73	37.39	½-1½	(87)
4719.37	A	1½	34.78	37.39	1½-1½	
*4615.98	A	4	34.73	37.40	½- ½	
4700.1	A	0	34.78	37.40	1½- ½	
4522.66	A	4	34.78	37.51	1½-2½	3d²P-4f⁴F°
4508.31	A	3	34.73	37.47	½-1½	(88)
4588.13	A	3	34.78	37.47	1½-1½	
4569.01	A	5	34.78	37.48	1½-2½	3d²P-4f⁴G° (89)
4511.37	A	4	34.78	37.51	1½-2½	†3d²P-4f²D°
4511.29	A	2	34.73	37.46	½-1½	(70)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ne II continued						
4795.62	A	2	34.81	37.39	2½-2½	$4s^4P-4f^4D^o$
4869.8	A	0	34.86	37.39	1½-1½	(71)
4923.3	A	0	34.90	37.40	½- ½	
4781.95	A	1	34.81	37.39	2½-1½	
4849.4	A	0	34.86	37.40	1½- ½	
4580.35	A	3	34.81	37.51	2½-2½	$4s^4P-4f^4F^o$
4730.24	A	½	34.86	37.47	1½-1½	(72)
4647.34	A	½	34.81	37.47	2½-1½	
4710.04	A	2	34.86	37.48	1½-2½	$4s^4P-4f^4G^o$
4627.85	A	3	34.81	37.48	2½-2½	(73)
4432.26	A	1	37.70	40.49	1½-2½	$sp^4(^1S)3p^3P^o$
4431.67	A	1	37.70	40.49	½-1½	$-sp^4(^1S)3d^2D$
4429.60	A	2	37.70	40.49	1½-2½	(74)

Na I I P 5.12	Anal A	List B	June 1944	
5889.953// A	(10R)D_2	0.00	2.10	½-1½ $3^2S-3^2P^o$
5895.923 A	(9R)D_1	0.00	2.09	½- ½ (1)
3302.34 B	(8R)	0.00	3.74	½-1½ $3^2S-4^2P^o$
3302.94 B	(8R)	0.00	3.74	½- ½ (2)
1403.55 C	10	2.10	3.18	1½- ½ $3^2P^o-4^2S$
1381.21 C	6	2.09	3.18	½- ½ (3)
3194.824 D	(10R)	2.10	3.60	1½-2½ $3^2P^o-3^2D$
3183.256 D	(8R)	2.09	3.60	½-1½ (4)
3194.791 D	(-)	2.10	3.60	1½-1½
3160.747 D	(8r)	2.10	4.10	1½- ½ $3^2P^o-5^2S$
3154.225 D	(8r)	2.09	4.10	½- ½ (5)
5688.205 D	(10)	2.10	4.27	1½-2½ $3^2P^o-4^2D$
5682.633 D	(8)	2.09	4.27	½-1½ (6)
5688.193 D	(-)	2.10	4.27	1½-1½
5675.3 P	(3s)Forb	2.10	4.37	1½- $3^2P^o-4^2F^o$
5669.8 P	(3s)Forb	2.09	4.37	½- (7)
5153.402 D	(8n)	2.10	4.49	1½- ½ $3^2P^o-6^2S$
5148.838 D	(5n)	2.09	4.49	½- ½ (8)
4982.813 D	(6r)	2.10	4.57	1½-2½ $3^2P^o-5^2D$
4978.541 D	(5r)	2.09	4.57	½-1½ (9)
4977.6 P	(1s)Forb	2.10	4.57	1½- $3^2P^o-5^2F^o$
4973.4 P	(1s)Forb	2.09	4.57	½- (10)
4751.822 D	(4n)	2.10	4.69	1½- ½ $3^2P^o-7^2S$
4747.941 D	(3n)	2.09	4.69	½- ½ (11)
4668.560 D	(4r)	2.10	4.74	1½-2½ $3^2P^o-6^2D$
4664.811 D	(3r)	2.09	4.74	½-1½ (12)
4665.8 P	(-)Forb	2.10	4.74	1½- $3^2P^o-6^2F^o$
4662.0 P	(-)Forb	2.09	4.74	½- (13)
4545.218 B	(4n)	2.10	4.81	1½- ½ $3^2P^o-8^2S$
4541.671 B	(3n)	2.09	4.81	½- ½ (14)
4497.657 D	(2n)	2.10	4.84	1½-2½ $3^2P^o-7^2D$
4494.180 D	(2n)	2.09	4.84	½-1½ (15)
4423.31 B	(4n)	2.10	4.89	1½- ½ $3^2P^o-9^2S$
4419.94 B	(3)	2.09	4.89	½- ½ (16)
4393.45 B	-	2.10	4.90	1½- $3^2P^o-8^2D$
4390.14 B	-	2.09	4.90	½-1½ (17)
0745.9 E	4	3.18	4.33	½-1½ $4^2S-5^2P^o$
0748.7 E	2	3.18	4.33	½- ½ (18)
3649.6 F	-	3.18	4.60	½- $4^2S-6^2P^o$ (19)
7809.4 F	-	3.18	4.76	½- $4^2S-7^2P^o$ (20)
3679.0 F	-	3.60	4.57	— $3^2D-5^2F^o$ (21)
0834.4 F	-	3.60	4.74	— $3^2D-6^2F^o$ (22)
9961.0 F	-	3.60	4.84	— $3^2D-7^2F^o$ (23)
9466.0 P	-	3.60	4.91	— $3^2D-8^2F^o$ (24)
9154.7 F	-	3.60	4.95	— $3^2D-9^2F^o$ (25)
8943.6 F	-	3.60	4.98	— $3^2D-10^2F^o$ (26)
8798 F	-	3.60	5.00	— $3^2D-11^2F^o$ (27)

Na II I P 47.10	Anal A	List D	June 1944	
3533.043 A	10	32.71	36.20	2-1 3s 1°-3p 1
3092.729 A	10	32.71	36.70	2-3 (1) -3p 2
3056.157 A	6	32.71	36.74	2-2 -3p 3
3007.443 A	4	32.71	36.81	2-1 -3p 4
3631.266 A	8	32.80	36.20	1-1 3s 2°-3p 1
3129.368 A	6	32.80	36.74	1-2 (2) -3p 3
3078.315 A	6	32.80	36.81	1-1 -3p 4
3984.183 A	7	32.80	36.94	1-2 -3p 5

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Na II continued						
3711.074	A	6	32.87	38.20	0-1	3s 3°-3p 1
3135.483	A	5	32.87	38.81	0-1	(3) -3p 4
4087.60	A	0	33.18	36.20	1-1	3s 4°-3p 1
3462.494	A	3	33.18	36.74	1-2	(4) -3p 3
3400.110	A	2	33.18	36.81	1-1	-3p 4
3285.603	A	8	33.18	36.94	1-2	-3p 5
3212.186	A	6	33.18	37.02	1-1	-3p 7
3189.783	A	6	33.18	37.05	1-2	-3p 8
3149.267	A	5	33.18	37.10	1-1	-3p 9
3015.400	A	6	36.74	40.84	2-2	3p 3-3d$^3P^o$ (5)
3064.372	A	4	36.81	40.84	1-2	3p 4-3d$^3P^o$ (6)
3179.055	A	5	36.94	40.82	2-1	3p 5-3d$^3P^o$
3163.731	A	6	36.94	40.84	2-2	(7)
*3078.315	A	6	36.94	40.94	2-2	3p 5-3d$^3F^o$ (8)
3074.334	A	6	36.94	40.95	2-3	3p 5-3d$^1F^o$ (9)
3234.926	A	4	37.02	40.84	1-2	3p 7-3d$^3P^o$ (10)
3045.593	A	5	37.02	41.07	1-0	3p 7-4s$^3P^o$ (11)
3007.071	A	5	37.02	41.08	1-2	3p 7-3d$^1D^o$ (12)
3009.138	A	4	37.02	41.12	1-1	3p 7-4s$^1P^o$ (13)
3274.220	A	5	37.05	40.82	2-1	3p 8-3d$^3P^o$
3257.965	A	6	37.05	40.84	2-2	(14)
3053.664	A	6	37.05	41.09	2-3	3p 8-3d$^3D^o$ (15)
3327.685	A	4	37.10	40.81	1-0	3p 9-3d$^3P^o$
3318.032	A	4	37.10	40.82	1-1	(16)
3235.976	A	4	37.10	40.92	1-2	3p 9-4s$^3P^o$
3104.396	A	4	37.10	41.07	1-0	(17)
3066.536	A	4	37.10	41.12	1-1	3p 9-4s$^1P^o$ (18)
4123.069	A	3	38.13	41.12	0-1	3p 10-4s$^1P^o$ (19)
4114.95	B	3	38.13	41.13	0-1	3p 10-3d$^3D^o$ (20)

For changes in Paschen notation see text § 37

Mg I I P 7.61	Anal A	List B	July 1944	
4571.0956 A	5	0.00	2.70	0-1 $3^1S-3^3P^o$ (1)
5183.6042 A	125	2.70	5.09	2-1 $3^3P^o-4^3S$
5172.6843 A	80	2.70	5.09	1-1 (2)
5167.3216 A	40	2.70	5.09	0-1
3838.2918 A	100r°	2.70	5.92	2-3 $3^3P^o-3^3D$
3832.3037 A	80r°	2.70	5.92	1-2 (3)
3829.3549 A	40	2.70	5.92	0-1
3838.2943 A	100r°	2.70	5.92	2-2
3832.2996 A	80r°	2.70	5.92	1-1
3336.69 B	20	2.70	6.40	2-1 $3^3P^o-5^3S$
3332.17 B	15	2.70	6.40	1-1 (4)
3329.93 B	10	2.70	6.40	0-1
3096.902 B	50	2.70	6.69	2- $3^3P^o-4^3D$
3092.997 B	40	2.70	6.69	1- (5)
3091.076 B	20	2.70	6.69	0-
11828.8 B	(120)	4.33	5.37	1-0 $3^1P^o-4^1S$ (6)
8806.7678 A	(10)	4.33	5.73	1-2 $3^1P^o-3^1D$
8806.7358 A	(3)			(7)
8806.7032 A	(3)			
5711.0912 A	(6)	4.33	6.49	1-0 $3^1P^o-5^1S$
5711.0831 A	(1)			(8)
5711.0735 A	(1)			
5528.4094 A	(10)	4.33	6.56	1-2 $3^1P^o-4^1D$
5528.3986 A	(3)			(9)
5528.3876 A	(3)			
4730.0285 A	(3)	4.33	6.94	1-0 $3^1P^o-6^1S$ (10)
4703.9909 A)	40	4.33	6.95	1-2 $3^1P^o-5^1D$
4703.9831 A)				(11)
4703.9758 A)				
4380.38 B	(5)	4.33	7.14	1-2 $3^1P^o-3p^2\ ^3P$ (12)
4354.540 B	(1)	4.33	7.16	1-0 $3^1P^o-7^1S$ (13)
4351.9056 A)	30	4.33	7.16	1-2 $3^1P^o-6^1D$
4351.8941 A)				(14)
4167.2713 A)	10n	4.33	7.29	1-2 $3^1P^o-7^1D$
4167.2604 A)				(15)
4057.5052 A	5n	4.33	7.37	1-2 $3^1P^o-8^1D$ (16)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mg I continued						
3986.7533	A	(1)	4.33	7.42	1-2	$3^1P^o-9^1D$ (17)
3938.400	A	(0)	4.33	7.46	1-2	$3^1P^o-10^1D$ (18)
3904.02	E	(3r)	4.33	7.49	1-2	$3^1P^o-11^1D$ (19)
3878.58	B	(1)	4.33	7.51	1-2	$3^1P^o-12^1D$ (20)
3859.24	B	(1)	4.33	7.52	1-2	$3^1P^o-13^1D$ (21)
7657.60	B	(35)	5.09	6.70	1-2	$4^3S-5^3P^o$ (22)
6318.23 B)		(5)	(5.09	7.04	1-2	$4^3S-6^3P^o$
6318.75 B)			5.09	7.04	1-	(23)
5785.08	B	(3)	5.09	7.22	1-2	$4^3S-7^3P^o$ (24)
8923.8	D	20	5.37	6.75	0-1	$4^1S-5^1P^o$ (25)
12083.79	P	(50)	5.73	6.75	2-3	$3^1D-4^1F^o$ (26)
9256.0	D	200Nl	5.73	7.06	2-3	$3^1D-5^1F^o$ (27)
8213.02	P	(-)	5.73	7.23	2-3	$3^1D-6^1F^o$ (28)
7691.57	P	(-)	5.73	7.33	2-3	$3^1D-7^1F^o$ (29)
7387.70	P	(-)	5.73	7.40	2-3	$3^1D-8^1F^o$ (30)
7193.20	P	(-)	5.73	7.44	2-3	$3^1D-9^1F^o$ (31)
7060.43	P		5.73	7.48	2-3	$3^1D-10^1F^o$ (32)
6965.42	P		5.73	7.50	2-3	$3^1D-11^1F^o$ (33)
6894.92	P		5.73	7.52	2-3	$3^1D-12^1F^o$ (34)
10966.1	P	(30)	5.91	7.03	2-	$4^3P^o-5^3D$
10961.2	P	(10)	5.91	7.03	1,0-	(35)
9993.7	D	3nl	5.91	7.14	2-1	$4^3P^o-7^3S$
9987.0	D	2n	5.91	7.14	1,0-1	(36)
10812.8	D	(30)	5.92	7.06	—	$3^3D-5^3F^o$ (37)
9415.5	D	10nl	5.92	7.23	—	$3^3D-6^3F^o$ (38)
8736.0	D	1n	5.92	7.33	—	$3^3D-7^3F^o$ (39)
8346.13	P		5.92	7.40	—	$3^3D-8^3F^o$ (40)
8098.72	P		5.92	7.44	—	$3^3D-9^3F^o$ (41)
7930.83	P		5.92	7.48	—	$3^3D-10^3F^o$ (42)
7811.14	P		5.92	7.50	—	$3^3D-11^3F^o$ (43)
7732.60	P		5.92	7.52	—	$3^3D-12^3F^o$ (44)
3627.63	B	(4)	6.56	9.96	2-3	$4^1D-3p3d^1F^o$ (45)
4099.77	B	(2)	6.95	9.96	2-3	$5^1D-3p3d^1F^o$ (46)
3895.662	B	(10)	7.14	10.31	2-3	$3p^2\ ^3P-3p3d^3D^o$
3891.976	B	(5)	7.14	10.31	1-2	(47)
3890.241	B	(3)	7.14	10.31	0-1	
3898.120	B	(4)	7.14	10.31	2-2	
3893.376	B	(3)	7.14	10.31	1-1	
4409.84	B	(1)	7.16	9.96	2-3	$6^1D-3p3d^1F^o$ (48)

Fine Structure

Mg II I P 14.97	Anal A	List A	June 1944	
9217.4 P		8.62	9.96	½-1½ $4^2S-4^2P^o$
9243.4 P		8.62	9.95	½- ½ (1)
3613.80 A	4	8.62	12.03	½-1½ $4^2S-5^2P^o$
3615.64 A	3	8.62	12.03	½- ½ (2)
10914.2 P		8.83	9.96	2½-1½ $3^2D-4^2P^o$
10949.4 P		8.83	9.95	1½- ½ (3)
4481.327 A)	100	(8.83	11.58	2½- $3^2D-4^2F^o$
4481.129 A)		8.83	11.58	1½-2½ (4)
3848.24 A	7	8.83	12.03	2½-1½ $3^2D-5^2P^o$
3850.40 A	6	8.83	12.03	1½- ½ (5)
3104.805 A)	30	(8.83	12.80	2½- $3^2D-5^2F^o$
3104.713 A)		8.83	12.80	1½-2½ (6)
8238.4 P		9.96	11.45	1½- ½ $4^2P^o-5^2S$
8217.8 P		9.95	11.45	½- ½ (7)
7896.37 A	-	9.96	11.52	1½- $4^2P^o-4^2D$
7877.13 A	-	9.95	11.52	½-1½ (8)
4433.991 A	8	9.96	12.74	1½- ½ $4^2P^o-6^2S$
4427.995 A	7	9.95	12.74	½- ½ (9)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mg II continued						
4390.585	A	10	9.96	13.77	1½-	$4^2P^o-5^2D$
4384.643	A	8	9.95	13.77	½-1½	(10)
3553.51	A	5	9.96	13.43	1½- ½	$4^2P^o-7^2S$
3549.61	A	4	9.95	13.43	½- ½	(11)
3538.86	A	6	9.96	13.44	1½-	$4^2P^o-6^2D$
3535.04	A	5	9.95	13.44	½-1½	(12)
3175.84	A	2	9.96	13.84	1½- ½	$4^2P^o-8^2S$
3172.79	A	1	9.95	13.84	½- ½	(13)
3168.98	A	3	9.96	13.85	1½-	$4^2P^o-7^2D$
3165.94	A	2	9.95	13.85	½-1½	(14)
9633.0	P		11.52	13.80	—	$4^2D-5^2F^o$ (15)
6346.67	A	5	11.52	13.46	—	$4^2D-6^2F^o$ (16)
5364.14	A	5	11.52	13.86	—	$4^2D-7^2F^o$ (17)
4739.59	A	5	11.52	14.12	—	$4^2D-8^2F^o$ (18)
4436.48	A	5	11.52	14.30	—	$4^2D-9^2F^o$ (19)
4242.47	A	4	11.52	14.43	—	$4^2D-10^2F^o$ (20)
4109.54	A	3	11.52	14.52	—	$4^2D-11^2F^o$ (21)
4013.80	A	2	11.52	14.59	—	$4^2D-12^2F^o$ (22)
6545.80	A	5	11.58	13.47	—	$4^2F^o-6^2G$ (23)
5401.05	A	5	11.58	13.86	—	$4^2F^o-7^2G$ (24)
4851.10	A	5	11.58	14.12	—	$4^2F^o-8^2G$ (25)
4534.26	A	4	11.58	14.30	—	$4^2F^o-9^2G$ (26)
4331.93	A	3	11.58	14.43	—	$4^2F^o-10^2G$ (27)
4193.44	A	2	11.58	14.52	—	$4^2F^o-11^2G$ (28)
4093.90	A	1	11.58	14.59	—	$4^2F^o-12^2G$ (29)

Al I I P 5.96 Anal A List B July 1944

3961.523//	A	10R	0.01	3.13	1½- ½	$3^2P^o-4^2S$
3944.009	A	10R	0.00	3.13	½- ½	(1)
3443.651	B	10	0.01	3.60	1½-2½	$3^2P^o-3p^2\ ^4P$
3439.352	B	8	0.00	3.59	½-1½	(2)
3452.670	B	5	0.01	3.59	1½-1½	
3444.871	B	7	0.00	3.58	½- ½	
3458.230	B	8	0.01	3.58	1½- ½	
3092.716	C	10R	0.01	4.00	1½-2½	$3^2P^o-3^2D$
3082.159	C	10R	0.00	4.00	½-1½	(3)
3092.843	C	6R	0.01	4.00	1½-1½	
13123.37	P	(400)	3.13	4.07	½-1½	$4^2S-4^2P^o$
13150.68	P	(200)	3.13	4.07	½- ½	(4)
6695.97	D	7	3.13	4.97	½-1½	$4^2S-5^2P^o$
6698.63	D	6	3.13	4.97	½- ½	(5)
5557.08	C	1n	3.13	5.35	½-1½	$4^2S-6^2P^o$
5557.95	C	1n	3.13	5.35	½- ½	(6)
3057.155	B	10	3.60	7.63	2½-2½	$3p^2\ ^4P-4s'\ ^4P^o$
3059.047	B	4	3.59	7.62	1½-1½	(7)
3066.158	B	5	3.60	7.62	2½-1½	
3064.302	B	5	3.59	7.62	1½- ½	
3050.073	B	9	3.59	7.63	1½-2½	
3054.694	B	6	3.58	7.62	½-1½	
11255.69	P	(300)	(4.00	5.10	2½-	$3^2D-4^2F^o$
11253.81	P		4.00	5.10	1½-	(8)
8773.91	D	20	4.00	5.41	2½-	$3^2D-5^2F^o$
8772.88	D	15	4.00	5.41	1½-2½	(9)
7836.15	D	10	4.00	5.58	2½-	$3^2D-6^2F^o$
7835.33	D	9	4.00	5.58	1½-2½	(10)
7362.31	D	10	4.00	5.68	2½-	$3^2D-7^2F^o$
7361.59	D	6	4.00	5.68	1½-2½	(11)
10891.21	P		4.07	5.20	1½- ½	$4^2P^o-6^2S$
10872.47	P		4.07	5.20	½- ½	(12)
10782.12	P		4.07	5.21	1½-2½	$4^2P^o-5^2D$
10768.39	P		4.07	5.21	½-1½	(13)
10786.78	P		4.07	5.21	1½-1½	
8923.56	D	2	4.07	5.45	1½-2½	$4^2P^o-6^2D$
8912.88	D	1	4.07	5.45	½-1½	(14)
8841.26	D	3	4.07	5.47	1½-2½	$4^2P^o-7^2S$
8828.91	D	1	4.07	5.47	½-1½	(15)
8075.37	D	4	4.07	5.60	1½-2½	$4^2P^o-7^2D$
8065.99	D	3	4.07	5.60	½-1½	(16)
3479.78	B	6	4.81	8.35	2½-2½	$4^2D-3d'\ ^2D^o$
3482.58	B	5l	4.81	8.35	1½-1½	(17)
3479.27	B	1	4.81	8.35	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Al I continued						
3931.97	B	5	5.21	8.35	2½-2½	$5^2D-3d'\ ^2D^o$
3935.77	B	4	5.21	8.35	1½-1½	(18)
3087.02	B	5	5.45	9.45	2½-1½	$6^2D-4d'\ ^2P^o$† (19)
3203.39	B	4	5.60	9.45	2½-1½	$7^2D-4d'\ ^2P^o$ (20)

Al II I P 18.75 Anal A List A July 1944

3900.680	B	10	7.39	10.55	1-2	$3^1P^o-3^1D$ (1)
4663.054	B	0	10.55	13.20	2-1	$3^1D-4^1P^o$ (2)
7043.06	A	10	11.27	13.02	1-2	$4^3S-4^3P^o$
7056.60	A	5	11.27	13.02	1-1	(3)
7063.64	A	1	11.27	13.01	1-0	
8640.70	A	8	11.77	13.20	0-1	$4^1S-4^1P^o$ (4)
3275.776	B	4	11.77	15.54	0-1	$4^1S-5^1P^o$ (5)
10076.29	A	6	11.80	13.02	3-2	$3^3D-4^3P^o$
10107.19	A	4	11.80	13.02	2-1	(6)
10122.50	A	0.5	11.80	13.01	1-0	
10077.32	A	1	11.80	13.02	2-2	
10077.53	A	0.5				
10108.01	A	0.5	11.80	13.02	1-1	
10108.37	A	0.2				
3586.557	A	10	11.80	15.24	3-4	$3^3D-4^3F^o$
3587.068	A	9	11.80	15.24	2-3	(7)
3587.450	A	8	11.80	15.24	1-2	
3586.912	A	4	11.80	15.24	3-3	
3586.936	A	2				
3587.309	A	2.5	11.80	15.24	2-2	
3587.342	A	3				
3587.165	A	0.5	11.80	15.24	3-2?	
*3587.195	A	1				
3586.708	A	1.5Forb	11.80	15.24	2-4	
3586.811	A	0.2Forb	11.80	15.24	1-4	
*3587.195	A	1 Forb	11.80	15.24	1-3	
3313.344	A	3	11.80	15.52	3-2	$3^3D-5^3P^o$
3314.883	A	2	11.80	15.52	2-1	(8)
3315.608	A	1	11.80	15.52	1-0	
3313.470	A	0.5	11.80	15.52	2-2	
3314.981	A	0	11.80	15.52	1-1	
3314.756	A	0.5Forb	11.80	15.52	3-1	
3315.516	A	0.2Forb	11.80	15.52	2-0	
6837.14	A	8	13.02	14.83	2-1	$4^3P^o-5^3S$
6833.48	A	5	13.02	14.83	1-1	(9)
6816.69	A	1	13.01	14.83	0-1	
6243.36	A	10	13.02	15.00	2-3	$4^3P^o-4^3D$
6231.78	A	9	13.02	15.00	1-2	(10)
6236.18	A	8	13.01	15.00	0-1	
3738.003	B	3	13.02	16.32	2-1	$4^3P^o-6^3S$
3733.910	B	2	13.02	16.32	1-1	(11)
3731.950	B	1	13.01	16.32	0-1	
3654.995	A	(8)	13.02	16.40	2-3	$4^3P^o-5^3D$
3651.096	A	5	13.02	16.40	1-2	(12)
3651.065	A	7 Forb	13.02	16.40	1-3?	
3649.184	A	1.5Forb	13.01	16.40	0-3?	
†3649.332	A	1 Forb	13.01	16.40	0-2?	
3026.776	P	1.5	13.02	17.10	2-1	$4^3P^o-7^3S$
3026.781	P					(13)
3024.098	P	1	13.02	17.10	1-1	
3024.114	P					
3023.804	P	0.5	13.01	17.10	0-1	
2998.158	P	2	13.02	17.14	2-	$4^3P^o-6^3D$
2998.163	P					(14)
2995.530	P	1.5	13.02	17.14	1-	
2995.546	P					
2994.259	P	1	13.01	17.14	0-1	
6919.96	B	0.5	13.20	14.98	1-0	$4^1P^o-5^1S$ (15)
5593.33	B	10	13.20	15.41	1-2	$4^1P^o-5^1D$ (16)
3866.160	B	2	13.20	16.39	1-0	$4^1P^o-6^1S$ (17)
3703.217	B	4	13.20	16.53	1-2	$4^1P^o-6^1D$ (18)
3135.875	B	3	13.20	17.13	1-0	$4^1P^o-7^1S$ (19)
3088.533	B	3	13.20	17.19	1-2	$4^1P^o-7^1D$ (20)
7471.41	A	9	13.59	15.24	2-3	$4^1D-4^1F^o$ (21)
6335.74	A	10	13.59	15.54	2-1	$4^1D-5^1P^o$ (22)
4237.57	P		13.59	16.50	2-1	$4^1D-5^1F^o$ (23)
4026.5	B	5	13.59	16.66	2-1	$4^1D-6^1P^o$ (24)
3428.916	B	6	13.59	17.19	2-3	$4^1D-6^1F^o$ (25)
3351.456	B	3	13.59	17.27	2-1	$4^1D-7^1P^o$ (26)
3074.665	B	6	13.59	17.60	2-3	$4^1D-7^1F^o$ (27)
3041.378	B	6	13.59	17.65	2-1	$4^1D-8^1P^o$ (28)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Al II continued						
6696.39	B	0.5	14.83	16.67	1-2	$5^3S-6^3P^o$
6699.46	B	0	14.83	16.67	1-1	(29)
4998.43	P		14.83	17.29	—	$5^3S-7^3P^o$ (30)
4332.0	B	0.5	14.83	17.67	—	$5^3S-8^3P^o$ (31)
*3983.7	B	0.5	14.83	17.92	—	$5^3S-9^3P^o$ (32)
3774.3	B	0	14.83	18.09	—	$5^3S-10^3P^o$ (33)
5388.48	B	1	14.98	17.27	0-1	$5^1S-7^1P^o$ (34)
4629.7	B	1	14.98	17.65	0-1	$5^1S-8^1P^o$ (35)
4240.75	B	3	14.98	17.89	0-1	$5^1S-9^1P^o$ (36)
4009.58	B	1	14.98	18.06	0-1	$5^1S-10^1P^o$ (37)
3859.33	B	3	14.98	18.18	0-1	$5^1S-11^1P^o$ (38)
3753.10	B	1	14.98	18.27	0-1	$5^1S-12^1P^o$ (39)
8354.35	A	10	15.00	16.47	3-4	$4^3D-5^3F^o$
8359.57	A	9	15.00	16.47	2-3	(40)
8363.52	A	8	15.00	16.47	1-2	
8359.33	A	1	15.00	16.47	3-3	
8363.30	A	1	15.00	16.47	2-2	
5853.62	B	5	15.00	17.11	3-4	$4^3D-6^3F^o$
5861.53	B	4	15.00	17.10	2-3	(41)
5867.81	B	3	15.00	17.10	1-2	
5371.84	B	6	15.00	17.29	3,2-	$4^3D-7^3P^o$ (42)
5085.02	B	4	15.00	17.42	3-4	$4^3D-7^3F^o$
5093.65	B	2	15.00	17.42	2-3	(43)
5100.34	B	1	15.00	17.42	1-2	
4609.7	B	1	15.00	17.67	—	$4^3D-8^3P^o$ (44)
4585.830	B	6	15.00	17.69	3-4	$4^3D-8^3F^o$
4588.194	B	5	15.00	17.69	2-3	(45)
4589.750	B	4	15.00	17.69	1-2	
4588.082	B	0.5	15.00	17.69	3-3	
4589.689	B	1	15.00	17.69	2-2	
4226.827	A	8	15.00	17.92	3-4	$4^3D-9^3F^o$
*4227.509	A	4	15.00	17.92	2-3	(46)
4227.999	A	3	15.00	17.92	1-2	
*4227.509	A	4	15.00	17.92	3-3	
4227.430	A	1				
4227.945	A	0.5	15.00	17.92	2-2	
4227.875	A	0	15.00	17.92	3-2	
4226.918	A	0Forb	15.00	17.92	2-4	
4227.545	A	0.5Forb	15.00	17.92	1-3	
3995.860	B	5	15.00	18.09	3-4	$4^3D-10^3F^o$
3996.159	B	4	15.00	18.09	2-3	(47)
3996.381	B	3	15.00	18.09	1-2	
3996.075	B	1	15.00	18.09	3-3	
3996.333	B	0.5	15.00	18.09	2-2	
3996.182	B	0.5Forb	15.00	18.09	1-3	
*3983.7	B	0.5	15.00	18.09	—	$4^3D-10^3P^o$ (48)
3842.037	B	3	15.00	18.21	3-4	$4^3D-11^3F^o$
3843.313	B	2	15.00	18.21	2-3	(49)
3842.317	B	1	15.00	18.21	1-2	
3734.567	B	1	15.00	18.30	3-4	$4^3D-12^3F^o$
3734.715	B	0.5	15.00	18.30	2-3	(50)
3734.805	B	0	15.00	18.30	1-2	
3656.319	B	0.5	15.00	18.37	3-4	$4^3D-13^3F^o$ (51)
3597.50	B	2	15.00	18.43	3-4	$4^3D-14^3F^o$ (52)
3552.00	B	1	15.00	18.47	3-	$4^3D-15^3F^o$ (53)
3516.05	B	0.5	15.00	18.51	3-	$4^3D-16^3F^o$ (54)
3463.63	B	0	15.00	18.56	3-	$4^3D-18^3F^o$ (55)
9331.546	A	3	15.24	16.56	3-	$4^1F^o-5^1G$
9331.979	A	2				(56)
6201.52	A	10	15.24	17.23	3-	$4^1F^o-6^1G$
6201.70	A	9				(57)
5158.187	B	1d	15.24	17.63	3-	$4^1F^o-7^1G$ (58)
4650.544	B	2	15.24	17.90	4-	$4^1F^o-8^1G$
4650.646	B	1.5				(59)
4356.711	B	2	15.24	18.07	3-	$4^1F^o-9^1G$
4356.807	B	1.5				(60)
4168.424	B	1	15.24	18.20	3-4	$4^1F^o-10^1G$
4168.511	B	0.5				(61)
4039.397	B	0	15.24	18.30	3-4	$4^1F^o-11^1G$
4039.302	B	0.5				(62)
3946.406	B	0.5d	15.24	18.37	3-	$4^1F^o-12^1G$ (63)
9290.649	A	6	15.24	16.56	4-	$4^3F^o-5^3G$
9290.747	A	5				(64)
9288.145	A	3	15.24	16.56	3-	
9288.550	A	2				
9286.578	A	1	15.24	16.56	2-	
9286.794	A	2				
6495.45	B	0.5	15.24	17.14	4-	$4^3F^o-6^3D$ (65)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Al II continued						
6183.42	A	10n	15.24	17.23	4–	$4^3F^o-6^3G$
6182.28	A	8	15.24	17.23	3–	(66)
6182.45	A	7				
6181.57	A	5	15.24	17.23	2–	
6181.68	A	6				
5277.68	B	2	15.24	17.57	4–	$4^3F^o-7^3D$
5276.81	B	2	15.24	17.57	3–	(67)
5276.42	B	2	15.24	17.57	2–	
5145.654	B	1.5d	15.24	17.63	4–	$4^3F^o-7^3G$
5144.998	B	1	15.24	17.63	3–	(68)
5144.875	B	0.5				
5144.413	B	0.5d	15.24	17.63	2–	
4640.362	B	4	15.24	17.90	4–	$4^3F^o-8^3G$
4640.384	B	3.5				(69)
4639.725	B	2	15.24	17.90	3–	
4639.833	B	1.5				
4639.384	B	1	15.24	17.90	2–	
4639.326	B	0.5				
4347.785	B	4	15.24	18.07	4–	$4^3F^o-9^3G$
4347.802	B	3.5				(70)
4347.223	B	2.0	15.24	18.07	3–	
4347.316	B	1.5				
4346.918	B	1.0	15.24	18.07	2–	
4346.866	B	0.5				
4160.263	B	3	15.24	18.20	4–	$4^3F^o-10^3G$
4160.339	B	2.5				(71)
4159.725	B	1.5	15.24	18.20	3–	
4159.809	B	1				
4159.450	B	1	15.24	18.20	2–	
4159.407	B	0.5				
4031.633	B	0.5d	15.24	18.30	4–	$4^3F^o-11^3G$
4031.210	B	0	15.24	18.30	3–	(72)
4031.135	B	0.5				
4030.867	B	0n	15.24	18.30	2–	
3939.066	B	0.5d	15.24	18.37	4–	$4^3F^o-12^3G$
3938.631	B	0.5d	15.24	18.37	3–	(73)
3870.057	B	0.5	15.24	18.43	4–	$4^3F^o-13^3G$ (74)
6917.93	A	1	15.41	17.19	2–3	$5^1D-6^1F^o$ (75)
6609.64	A	0.5	15.41	17.27	2–1	$5^1D-7^1P^o$ (76)
5613.19	B	3	15.41	17.60	2–3	$5^1D-7^1F^o$ (77)
5503.88	B	3	15.41	17.65	2–1	$5^1D-8^1P^o$ (78)
5000.97	B	3	15.41	17.87	2–3	$5^1D-8^1F^o$ (79)
4962.10	B	3	15.41	17.89	2–1	$5^1D-9^1P^o$ (80)
4653.0	B	0.5	15.41	18.06	2–3	$5^1D-9^1F^o$ (81)
4648.62	B	1	15.41	18.06	2–1	$5^1D-10^1P^o$ (83)
4447.8	B	3	15.41	18.18	2–1	$5^1D-11^1P^o$ (83)
4432.82	B	0.5	15.41	18.19	2–3	$5^1D-10^1F^o$ (84)
4307.20	B	3	15.41	18.27	2–1	$5^1D-12^1P^o$ (85)
4282.97	B	0.5	15.41	18.29	2–3	$5^1D-11^1F^o$ (86)
4202.4 ?	B	2	15.41	18.34	2–1	$5^1D-13^1P^o$ (87)
4056.8	B	0.5	15.41	18.45	2–1	$5^1D-15^1P^o$ (88)
4005.7	B	0	15.41	18.49	2–1	$5^1D-16^1P^o$ (89)
7833.72	A	2	15.52	17.10	2–1	$5^3P^o-7^3S$
7815.83	A	1	15.52	17.10	1–1	(90)
7813.31	A	0.5	15.52	17.10	0–1	
7635.33	A	2	15.52	17.14	2–	$5^3P^o-6^3D$
7627.85	A	1	15.52	17.14	1–	(91)
7624.48	A	0.5	15.52	17.14	0–1	
6073.23	A	10	15.52	17.55	2–1	$5^3P^o-8^3S$
6068.46	A	(8)	15.52	17.55	1–1	(92)
6066.32	A	3	15.52	17.55	0–1	
6066.44	A	2				
6006.42	A	10	15.52	17.57	2–	$5^3P^o-7^3D$
6001.81	A	(8)	15.52	17.57	1–	(93)
5999.70	A	3	15.52	17.57	0–1	
5999.83	A	2				
5316.07	B	7	15.52	17.84	2–1	$5^3P^o-9^3S$
5313.32	B	5	15.52	17.84	1–1	(94)
5310.76	B	2	15.52	17.84	0–1	
5283.77	B	8	15.52	17.86	2–	$5^3P^o-8^3D$
5280.21	B	6	15.52	17.86	1–	(95)
5278.62	B	3	15.52	17.86	0–1	
4903.77	B	5	15.52	18.04	2–1	$5^3P^o-10^3S$
4899.64	B	3	15.52	18.04	1–1	(96)
4898.52	B	2	15.52	18.04	0–1	
4635.7	B	1	15.52	18.18	2–	$5^3P^o-10^3D$
4633.2	B	0.5	15.52	18.18	1–	(97)
4631.5	B	0.5	15.52	18.18	0–1	
7449.42	A	5	15.54	17.19	1–2	$5^1P^o-7^1D$ (98)
6061.11	A	6	15.54	17.57	1–0	$5^1P^o-8^1S$ (99)
5971.94	A	7	15.54	17.60	1–2	$5^1P^o-8^1D$ (100)
5324.61	B	4	15.54	17.86	1–0	$5^1P^o-9^1S$ (101)
5285.85	B	6	15.54	17.87	1–2	$5^1P^o-9^1D$ (102)
4918.98	B	3	15.54	18.05	1–0	$5^1P^o-10^1S$ (103)
4898.76	B	5	15.54	18.06	1–2	$5^1P^o-10^1D$ (104)
4666.8	B	11	15.54	18.18	1–0	$5^1P^o-11^1S$ (105)
4655.05	B	0.5	15.54	18.19	1–2	$5^1P^o-11^1D$ (106)
4489.87	B	0.5	15.54	18.29	1–2	$5^1P^o-12^1D$ (107)
9124.27	A	0.5	16.32	17.67	1–2	$6^3S-8^3P^o$ (108)
6001.18	B	1	16.39	18.45	0–1	$6^1S-15^1P^o$ (109)
8119.72	A	1.5	16.40	17.92	–4	$5^3D-9^3F^o$
8133.08	A	0.5	16.40	17.92	–3	(110)
8131.89	A	0.2				
8133.52	A	0	16.40	17.92	–2	
6775.97	B	0.5	16.40	18.22	–	$5^3D-11^3P^o$ (111)
8680.31	A	3	16.47	17.90	4–	$5^3F^o-8^3G$
8674.92	A	2	16.47	17.90	3–	(112)
8675.28	A	1				
8671.06	A	0.5	16.47	17.90	2–	
8671.28	A	1				
7709.78	A	0	16.47	18.07	4–	$5^3F^o-9^3G$ (113)
7138.81	B	0.5	16.47	18.20	4–	$5^3F^o-10^3G$
7134.66	B	0.5	16.47	18.20	3–	(114)
7131.29	B	0	16.47	18.20	2–	
8858.39	A	1	16.50	17.90	3–	$5^1F^o-8^1G$
8858.77	A	0.5				(115)
8086.91	A	0.5	16.53	18.06	2–3	$6^1D-9^1F^o$ (116)
9249.41	A	1	16.56	17.90	—	$5^1G-8^1H^o$ (117)
8160.15	A	3	16.56	18.08	—	$5^1G-9^1H^o$ (118)
7526.2	A	0.2	16.56	18.20	—	$5^1G-10^1H^o$ (119)

Fine Structure

Al III	I P 28.33	Anal A	List A	July 1944
3601.623	A (20)	14.31 17.74	2½-1½	$3^2D-4^2P^o$
3612.352	A (15)	14.31 17.73	1½- ½	(1)
3601.916	A 1	14.31 17.74	1½-1½	
5696.47	A 8	15.57 17.74	½-1½	$4^2S-4^2P^o$
5723.65	A 6	15.57 17.73	½- ½	(2)
4529.176	A (10)	17.74 20.47	1½-2½	$4^2P^o-4^2D$
4513.535	A (8)	17.73 20.47	½-1½	(3)
4528.911	A 1	17.74 20.47	1½-1½	
3713.103	A (15)	17.74 21.07	1½- ½	$4^2P^o-5^2S$
3702.086	A (10)	17.73 21.07	½- ½	(4)
4149.897	A (10)	20.47 23.44	2½-3½	$4^2D-5^2F^o$
4150.138	A (8)	20.47 23.44	1½-2½	(5)
4149.917	A 1	20.47 23.44	2½-3½	
4701.65	A 6	20.69 23.32	—	$4^2F^o-5^2D$ (6)
4490.90	A 2nn Forb	20.69 23.44	—	$4^2F^o-5^2F^o$ (7)
4479.968	A 4	20.69 23.45	3½-	$4^2F^o-5^2G$
4479.891	A 3	20.69 23.45	2½-3½	(8)
4364.59	A 2n	22.03 24.86	1½-	$5^2P^o-6^2D$
4357.24	P	22.03 24.86	½-1½	(9)
3387.37	A 1	22.03 25.79	1½-	$5^2P^o-7^2D$
3383.11	A 0.5	22.03 25.79	½-1½	(10)
4903.71	A 4	23.32 25.83	—	$5^2D-7^2F^o$ (11)
3980.56	A 2n	23.32 26.42	—	$5^2D-8^2F^o$ (12)
5260.91	A 0n	23.44 25.79	—	$5^2F^o-7^2D$ (13)
5150.86	A 6n	23.44 25.84	—	$5^2F^o-7^2G$ (14)
4188.88	A 0.5	23.44 26.39	—	$5^2F^o-8^2D$ (15)
4142.15	A 2n	23.44 26.42	—	$5^2F^o-8^2G$ (16)
4141.25	A On Forb	23.44 26.42	—	$5^2F^o-8^2H^o$ (17)
5172.6	A 1	23.45 25.83		$5^2G-7^2F^o$ (18)
5163.90	A 7	23.45 25.84		$5^2G-7^2H^o$ (19)
3658.3	A (1n)	23.45 26.82		$5^2G-9^2H^o$ (20)

REVISED
See NSRDS-NBS 3, Section 2, 1967

Si I	I P 8.11	Anal B	List A	Aug 1944
2970.35	A 15	0.78	4.93	2–2 $3p^2\ ^1D-4s^3P^o$
2987.65	A 25	0.78	4.91	2–1 (1)
4102.926	A 25	1.90	4.91	0–1 $3p^2\ ^1S-4s^3P^o$ (2)
3905.527	A 100	1.90	5.06	0–1 $3p^2\ ^1S-4s^1P^o$ (3)
12031.49	A 25	4.93	5.96	2–3 $4s^3P^o-4p^3D$
11984.20	A 20	4.91	5.94	1–2 (4)
11991.57	A 10	4.90	5.93	0–1
12370.50	A 2	4.93	5.94	2–2
12103.46	A 5	4.91	5.93	1–1
12395.97	P	4.93	5.93	2–1
10827.09	A 100	4.93	6.07	2–2 $4s^3P^o-4p^3P$
10749.40	A 60	4.91	6.06	1–1 (5)
10979.27	A 35	4.93	6.06	2–1
10786.86	A 50	4.91	6.05	1–0
10603.38	A 60	4.91	6.07	1–2
10660.98	A 50	4.90	6.06	0–1
10585.12	A 100	4.93	6.10	2–1 $4s^3P^o-4p^3S$
10371.33	A 50	4.91	6.10	1–1 (6)
10288.83	A 25	4.90	6.10	0–1
9768.27	A 5w	4.93	6.20	2–2 $4s^3P^o-4p^1D$
9585.72	A 4	4.91	6.20	1–2 (7)
8435.28	P	4.91	6.37	1–0 $4s^3P^o-4p^1S$ (8)
5797.912	A 40	4.93	7.06	2–3 $4s^3P^o-5p^3D$
5793.128	A 30	4.91	7.04	1–2 (9)
5780.452	A 25	4.90	7.03	0–1
5859.23	P	4.93	7.04	2–2
5708.437	A 75	4.93	7.09	2–2 $4s^3P^o-5p^3P$
5690.470	A 40	4.91	7.08	1–1 (10)
5754.258	A 8w	4.93	7.08	2–1
5701.138	A 25	4.91	7.07	1–0
5645.665	A 25	4.91	7.09	1–2
5665.601	A 25	4.90	7.08	0–1
5684.523	A 50	4.93	7.10	2–1 $4s^3P^o-5p^3S$
5622.23	A 3	4.91	7.10	1–1 (11)
11890.44	P	5.06	6.10	1–1 $4s^1P^o-4p^3S$ (12)
10869.54	A 125	5.06	6.20	1–2 $4s^1P^o-4p^1D$ (13)
9413.59	A 200	5.06	6.37	1–0 $4s^1P^o-4p^1S$ (14)
6067.62	P	5.06	7.09	1–2 $4s^1P^o-5p^3P$ (15)
5948.584	A 100	5.06	7.14	1–2 $4s^1P^o-5p^1D$ (16)
5772.258	A 50	5.06	7.20	1–0 $4s^1P^o-5p^1S$ (17)
8417.89	P	5.59	7.06	3–3 $3d^3D^o-5p^3D$
8527.32	P	5.59	7.04	2–2 (18)
8397.96	P	5.59	7.06	2–3
8514.64	P	5.59	7.04	1–2
8230.67	A 15	5.59	7.09	3–2 $3d^3D^o-5p^3P$
8306.80	A 4w	5.59	7.08	2–1 (19)
8317.45	A 2w	5.59	7.07	1–0
8211.48	A 2	5.59	7.09	2–2
8150.57	P	5.59	7.10	1–1 $3d^3D^o-5p^3S$ (20)
7995.00	P	5.59	7.14	2–2 $3d^3D^o-5p^1D$ (21)
7416.00	A 250	5.59	7.26	2–3 $3d^3D^o-4f^1F$ (22)
7423.54	A 500	5.59	7.26	3–4 $3d^3D^o-4f^3F$
7409.11	A 100	5.59	7.26	2–3 (23)
7405.85	A 300	5.59	7.26	1–2
7424.63	A 20	5.59	7.26	3–3
7415.37	A 15	5.59	7.26	2–2
7289.25	A 250	5.59	7.29	3–4 $3d^3D^o-4f^3G$
7275.28	A 50	5.59	7.29	2–3 (24)
7290.21	A 10	5.59	7.29	3–3
7250.69	A 40	5.59	7.30	3–3 $3d^3D^o-4f^3D$
7193.56	A 8	5.59	7.31	2–2 (25)
7184.89	A 10	5.59	7.31	1–1
7208.20	A 1	5.59	7.31	3–2
7193.89	A 5	5.59	7.31	2–1
7235.86	A 10	5.59	7.30	2–3
7184.54	A 1	5.59	7.31	1–2
7235.32	A 15	5.59	7.30	2–2 $3d^3D^o-4f^1D$
7226.20	A 20	5.59	7.30	1–2 (26)
6244.56	A 10n	5.59	7.57	2–2 $3d^3D^o-5f^1D$
6237.62	A 5n	5.59	7.57	1–2 (27)
6254.25	A 25n	5.59	7.57	3–4 $3d^3D^o-5f^3F$
6243.86	A 10n	5.59	7.57	2–3 (28)
6237.34	A 5n	5.59	7.57	1–2
6254.96	A 2n	5.59	7.57	3–3
6244.13	P	5.59	7.57	2–2

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Si I continued						
6155.22	A	20n	5.59	7.60	3-4	$3d^3D^o-5f^3G$
6145.08	A	10n	5.59	7.60	2-3	(39)
6155.73	A	2n	5.59	7.60	3-3	
6142.53	A	5n	5.59	7.60	3-3	$3d^3D^o-5f^3D$
6131.54	A	4n	5.59	7.60	2-2	(30)
6124.85	A	2n	5.59	7.60	1-1	
6131.86	A	5n	5.59	7.60	2-3	
6125.03	A	4n	5.59	7.60	1-2	
6142.21	P		5.59	7.60	3-2	
6131.30	P		5.59	7.60	2-1	
10844.02	A	25w	5.84	6.98	1-2	$4p^1P-4d^1D^o$ (31)
10627.81	A	20w	5.84	7.00	1-2	$4p^1P-4d^3P^o$ (32)
8179.43	P		5.84	7.35	1-2	$4p^1P-6s^3P^o$
8338.43	A	5w	5.84	7.32	1-1	(33)
8093.32	A	25w	5.84	7.36	1-1	$4p^1P-6s^1P^o$ (34)
7913.47	A	10w	5.84	7.40	1-2	$4p^1P-5d^3P^o$ (35)
7680.35	A	100w	5.84	7.44	1-2	$4p^1P-5d^1D^o$ (36)
6848.65	A	4w	5.84	7.64	1-1	$4p^1P-7s^1P^o$ (37)
6722.67	A	2w	5.84	7.67	1-2	$4p^1P-6d^1D^o$ (38)
11018.00	A	70	5.85	6.97	2-1?	$3d^1D^o-5p^1P$ (39)
10153.13	P		5.85	7.06	2-3	$3d^1D^o-5p^3D$ (40)
10020.16	A	1	5.85	7.08	2-1	$3d^1D^o-5p^3P$ (41)
*9570.08	A	4	5.85	7.14	2-2	$3d^1D^o-5p^1D$ (42)
8752.17	A	200	5.85	7.26	2-3	$3d^1D^o-4f^1F$ (43)
8742.60	A	100	5.85	7.26	2-3	$3d^1D^o-4f^3F$
8751.18	P		5.85	7.26	2-2	(44)
8556.64	A	100w	5.85	7.29	2-3	$3d^1D^o-4f^3G$ (45)
8502.38	A	30w	5.85	7.30	2-3	$3d^1D^o-4f^3D$
8444.00	A	15w	5.85	7.31	2-2	(46)
8444.48	A	3w	5.85	7.31	2-1	
8501.50	A	20w	5.85	7.30	2-2	$3d^1D^o-4f^1D$ (47)
7165.62	A	100w	5.85	7.57	2-2	$3d^1D^o-5f^1D$ (48)
*7164.75	A		5.85	7.57	2-3	$3d^1D^o-5f^3F$
7165.09	P)	2w	(5.85	7.57	2-2	(49)
7034.96	A	50w	5.85	7.60	2-3	$3d^1D^o-5f^3G$ (50)
7017.98	A	4w	5.85	7.60	2-3	$3d^1D^o-5f^3D$
7017.68	A	10w	5.85	7.60	2-2	(51)
7016.90	P		5.85	7.60	2-1	
6527.20	P		5.85	7.74	2-2	$3d^1D^o-6f^3F$ (52)
10737.21	A	75w	5.96	7.11	3-4	$4p^3D-4d^3F^o$
10694.14	A	50w	5.94	7.09	2-3	(53)
10689.52	A	20w	5.93	7.08	1-2	
10882.66	A	5w	5.96	7.09	3-3	
10784.33	A	5w	5.94	7.08	2-2	
8892.97	A	25w	5.96	7.35	3-2	$4p^3D-6s^3P^o$
8949.33	A	15w	5.94	7.32	2-1	(54)
8925.55	A	8w	5.93	7.31	1-0	
8766.68	A	3w	5.94	7.35	2-2	
8883.84	A	4w	5.93	7.32	1-1	
8667.40	P		5.94	7.36	2-1	$4p^3D-6s^1P^o$
8606.43	A	1w	5.93	7.36	1-1	(55)
8579.15	A	2w	5.96	7.40	3-2	$4p^3D-5d^3P^o$ (56)
7943.94	A	500w	5.96	7.51	3-4	$4p^3D-5d^3F^o$
7932.20	A	300w	5.94	7.49	2-3	(57)
7918.38	A	200w	5.93	7.49	1-2	
8035.39	A	7w	5.96	7.49	3-3	
7970.26	A	10w	5.94	7.49	2-2	
7373.02	A	10w	5.96	7.63	3-2	$4p^3D-7s^3P^o$
7285.94	P		5.94	7.63	2-2	(58)
7255.28	P		5.94	7.64	2-1	$4p^3D-7s^1P^o$ (59)
7005.84	A	50w	5.96	7.72	3-4	$4p^3D-6d^3F^o$
7003.58	A	50w	5.94	7.70	2-3	(60)
6976.53	A	25w	5.93	7.70	1-2	
7084.33	A	2w	5.96	7.70	3-3	
6813.85	P		5.96	7.77	3-3	$4p^3D-7d^3D^o$
6730.38	P		5.93	7.76	1-1	(61)
6842.35	P		5.96	7.76	3-2	
6729.80	P		5.93	7.76	1-2	
6527.49	A	3n	5.96	7.85	3-4	$4p^3D-7d^3F^o$
6555.20	A	2n	5.94	7.82	2-3	(62)
6560.68	A	2n	5.93	7.81	1-2	
10262.49	P		6.06	7.26	1-1	$4p^3P-4d^1P^o$ (63)
10067.84	A	4w	6.07	7.30	2-3	$4p^3P-5d^3D^o$
10025.80	P		6.06	7.29	1-2	(64)
9967.46	A	1	6.05	7.29	0-1	
10155.88	A	1	6.07	7.29	2-2	
10001.35	P		6.06	7.29	1-1	
9689.41	A	8w	6.07	7.35	2-2	$4p^3P-6s^3P^o$
9789.24	A	2n	6.06	7.32	1-1	(65)
9913.16	A	1w	6.07	7.32	2-1	
9839.58	A	2w	6.06	7.31	1-0	
*9570.08	A	4	6.06	7.35	1-2	
9758.08	A	2n	6.05	7.32	0-1	
9318.24	A	4	6.07	7.40	2-2	$4p^3P-5d^3P^o$
9238.60	A	2n	6.07	7.41	2-1	(66)
*9103.37	A	3w	6.06	7.41	1-0	
9208.55	A	5w	6.06	7.40	1-2	
*9103.37	A	3w	6.05	7.41	0-1	
8070.64	P		6.07	7.60	2-3	$4p^3P-6d^3D^o$
8086.18	P		6.06	7.58	1-2	(67)
7912.55	A	3w	6.07	7.63	2-2	$4p^3P-7s^3P^o$ (68)
7898.38	P		6.07	7.63	2-2	$4p^3P-6d^3P^o$ (69)
7105.34	P		6.06	7.79	1-1	$4p^3P-8s^1P^o$
7089.03	P		6.05	7.79	0-1	(70)
9891.90	A	5w	6.10	7.35	1-2	$4p^3S-6s^3P^o$ (71)
9505.28	A	5	6.10	7.40	1-2	$4p^3S-5d^3P^o$
9421.82	A	4	6.10	7.41	1-1	(72)
9393.40	A	2w	6.10	7.41	1-0	
8046.78	P		6.10	7.63	1-2	$4p^3S-7s^3P^o$ (73)
8009.39	P		6.10	7.64	1-1	$4p^3S-7s^1P^o$ (74)
7392.18	P		6.10	7.77	1-2	$4p^3S-8s^3P^o$
7455.47	P		6.10	7.75	1-1	(75)
11468.54	A	1w	6.18	7.26	4-4	$3d^3F^o-4f^3F$
11202.02	A	1w	6.15	7.26	2-2	(76)
11308.45	A	2w	6.16	7.26	3-2	
11290.01	A	10w	6.16	7.26	3-4	
11187.74	A	20w	6.15	7.26	2-3	
11130.37	A	7w	6.18	7.29	4-5	$3d^3F^o-4f^3G$
10982.28	A	7w	6.16	7.29	3-4	(77)
10885.16	A	10w	6.15	7.29	2-3	
10984.24	A	3w	6.16	7.29	3-3	
10893.72	P		6.16	7.30	3-2	$3d^3F^o-4f^1D$
10796.52	A	0n	6.15	7.30	2-2	(78)
*8898.97	A	3w	6.18	7.57	4-4	$3d^3F^o-5f^3F$
*8790.88	A	4w	6.16	7.57	3-3	(79)
8729.02	A	5w	6.15	7.57	2-2	
8899.50	A	3w	6.18	7.57	4-3	
8791.28	A	5w	6.16	7.57	3-2	
*8790.88	A	4w	6.16	7.57	3-4	
8728.38	A	10w	6.15	7.57	2-3	
8596.02	P		6.16	7.60	3-4	$3d^3F^o-5f^3G$
8536.38	A	3w	6.15	7.60	2-3	(80)
8597.00	A	2nl	6.16	7.60	3-3	
7850.5	A	2N	6.16	7.74	3-2	$3d^3F^o-6f^3F$
7800.0	A	4N	6.15	7.74	2-2	(81)
11607.42	A	0w	6.20	7.26	2-1	$4p^1D-4d^1P^o$ (82)
11485.68	A	2w	6.20	7.27	2-3	$4p^1D-4d^1F^o$ (83)
10582.66	A	1	6.20	7.36	2-1	$4p^1D-6s^1P^o$ (84)
9886.92	A	2w	6.20	7.44	2-2	$4p^1D-5d^1D^o$ (85)
*8898.97	A	3w	6.20	7.58	2-3	$4p^1D-5d^1F^o$ (86)
8576.46	P		6.20	7.63	2-2	$4p^1D-6d^3P^o$ (87)
8550.34	P		6.20	7.64	2-1	$4p^1D-7s^1P^o$ (88)
7431.17	P		6.20	7.86	2-3	$4p^1D-7d^1F^o$ (89)
11611.49	A	5w	6.23	7.30	2-3	$3d^3P^o-4f^3D$
*11591.98	A	4w	6.24	7.31	1-2	(90)
11640.58	A	2w	6.25	7.31	0-1	
11502.94	A	3w	6.23	7.31	2-2	
*11591.98	A	4w	6.24	7.31	1-1	
*9009.04	A	5nl	6.23	7.60	2-3	$3d^3P^o-5f^3D$
9064.06	A	0wl	6.24	7.60	1-2	(91)
*9009.04	A	5nl	6.23	7.60	2-2	
10015.33	A	1	6.37	7.60	0-1	$4p^1S-7s^3P^o$ (92)

Strongest Unclassified Lines of Si I

9770.10	A	4w
9738.60	A	6w
9254.59	A	4n
8648.89	A	100nl
8503.17	A	5
7743.2	A	4n
7742.7	A	5n
6721.97	A	4w
6415.24	A	4w

REVISED
See NSRDS-NBS 3, Section 1, 196

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Si II I P 16.27 Anal B List A Aug 1944						
3856.021	A	8	6.83	10.03	2½-1½	$3p^2\ ^2D-4^2P^o$
3862.592	A	6	6.83	10.02	1½- ½	(1)
3853.657	A	3	6.83	10.03	1½-1½	
6347.091	A	10	8.09	10.03	½-1½	$4^2S-4^2P^o$
6371.359	A	8	8.09	10.02	½- ½	(2)
4130.884	A	10	9.80	12.78	2½-	$3^2D-4^2F^o$
4128.053	A	8	9.79	12.78	1½-2½	(3)
5978.970	A	7	10.03	12.09	1½- ½	$4^2P^o-5^2S$
5957.612	A	5	10.02	12.09	½- ½	(4)
5056.020	A	10	10.03	12.47	1½-2½	$4^2P^o-4^2D$
5041.063	A	8	10.02	12.47	½-1½	(5)
5056.353	A	2	10.03	12.47	1½-1½	
3339.84	A	3	10.03	13.73	1½- ½	$4^2P^o-6^2S$
3333.16	A	2	10.02	13.73	½- ½	(6)
3210.04	A	3	10.03	13.87	1½-	$4^2P^o-5^2D$
3203.89	A	2	10.02	13.87	½-1½	(7)
5868.404	A	3	?	?	2½-2½	$3p4s4P^o-3p4p$
5846.12	A	0	?	?	1½-1½	(8)
5827.80	A	0	?	?	½- ½	
5915.266	A	1	?	?	2½-1½	
5867.497	A	1	?	?	1½- ½	
5800.48	A	1	?	?	1½-2½	
5806.75	A	2	?	?	½-1½	
5639.492	A	2	?	?	2½-1½	$3p4s4P^o-3p4p'$
5576.61	A	1	?	?	1½-1½	(9)
5540.74	A	0	?	?	½-1½	

Strongest Unclassified Lines of Si II

6671.88	A	3
6660.49	A	2
5785.64	A	1
5706.375	A	1
5701.375	A	1
5688.856	A	2
5669.590	A	4
5496.24	A	1
5468.92	A	2
5456.11	A	2
5438.41	A	1
5294.97	A	1
5202.51	A	3
5192.75	A	1
5185.09	A	1
5181.77	A	1
4921.69	A	1
4906.88	A	1n
4859.28	A	1
4656.80	A	1
4198.174	A	2
4190.738	A	3
4076.78	A	1
4075.45	A	2
3998.00	A	1n
3991.77	A	2n
3199.54	A	1
3193.10	A	1
3188.95	A	1

REVISED
See NSRDS-NBS 3, Section 1, 1965

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Si III I P 33.32 Anal B List A Aug 1944						
3086.225	A	7	17.63	21.63	3-2	$3^3D-4^3P^o$
3093.423	A	6	17.63	21.62	2-1	(1)
3096.786	A	4	17.64	21.62	1-0	
3086.429	A	3	17.63	21.63	2-2	
3093.613	A	3	17.64	21.62	1-1	
3086.620	A	1	17.64	21.63	1-2	
4552.654	A	9	18.92	21.63	1-2	$4^3S-4^3P^o$
4567.872	A	7	18.92	21.62	1-1	(2)
4574.777	A	4	18.92	21.62	1-0	
4338.52	A	1	18.94	21.79	0-1	$3p^2\ ^1S-4^1P^o$ (3)
5739.762	A	8	19.64	21.79	0-1	$4^1S-4^1P^o$ (4)
3806.56	A	5	21.63	24.88	2-	$4^3P^o-4^3D$
3796.11	A	4	21.62	24.88	1-	(5)
3791.41	A	3	21.62	24.88	0-1	
3241.67	A	6	21.63	25.44	2-1	$4^3P^o-5^3S$
3234.00	A	5	21.62	25.44	1-1	(6)
3230.55	A	3	21.62	25.44	0-1	
3590.46	A	8	21.79	25.22	1-2	$4^1P^o-4^1D$ (7)
3185.16	A	3	21.79	25.66	1-0	$4^1P^o-5^1S$ (8)

Laboratory I A	Rsf	Int	E P Low	E P High	J	Multiplet (No)
Si III continued						
4828.923	A	4n	25.86	28.42	4-	$4^3F^o-5^3G$
4819.740	A	3n	25.86	28.42	3-	(9)
4813.290	A	2n	25.85	28.42	2-3	
3040.93	A	1	25.86	29.92	4-	$4^3F^o-6^3G$
3037.26	A	1	25.86	29.92	3-	(10)
3034.74	A	1	25.85	29.93	2-	
3126.25	A	0	26.68	30.62	2-3	$3p3d^3P^o-3p4p^3P$
3147.38	A	0	26.68	30.60	2-1	(11)
3258.67	A	1	26.84	30.62	3-2	$3p3d^3P^o-3p4p^3P$
3276.25	A	1	26.83	30.60	2-1	(12)
3279.25	A	0	26.82	30.59	1-0	
3253.44	A	00	26.83	30.62	2-2	
4683.018	A	2	27.99	30.62	2-2	$3p4s^3P^o-3p4p^3P$
4665.87	A	0	27.95	30.60	1-1	(13)
4683.774	A	2	27.95	30.59	1-0	
4638.13	A	1	27.94	30.60	0-1	
Unclassified Lines of Si III						
4716.658	A	5				
3924.44	A	4				
3486.93	A	6				
3482.70	A	On				
3210.52	A	3				
3196.50	A	3				
3186.01	A	2				

REVISED
See NSRDS-NBS 3, Section 1, 1965

Si IV I P 44.95 Anal A List A Aug 1944

4088.863	A	10	23.95	26.97	½-1½	$4^2S-4^2P^o$
4116.104	A	8	23.95	26.95	½- ½	(1)
3165.72	A	8	26.97	30.86	1½-2½	$4^2P^o-4^2D$
3149.56	A	(7)	26.95	30.86	½-1½	(2)
3762.41	A	(5)	30.86	34.14	2½-1½	$4^2D-5^2P^o$
3773.13	A	(4)	30.86	34.13	1½- ½	(3)
4328.22	B	(4)	34.14	37.00	1½- ½	$5^2P^o-6^2S$
4314.18	B	(3)	34.13	37.00	½- ½	(4)
4212.44	A	(4)	35.99	38.92	—	$5^2D-6^2F^o$
						(5)
4631.38	A	(5)	36.26	38.92	—	$5^2F^o-6^2G$
						(6)
4654.14	A	(6)	36.27	38.93	—	$5^2G-6^2H^o$
						(7)

P I I P 10.9 Anal C List B Sept 1944

0581.52	A	8	6.96	8.12	2½-3½	$4s^4P-4p^4D^o$
0529.45	A	5	6.93	8.10	1½-2½	(1)
0511.45	A	3	6.91	8.08	½-1½	
0813.03	A	0	6.96	8.10	2½-2½	
0681.43	A	1	6.93	8.08	1½-1½	
0596.92	A	1	6.91	8.07	½- ½	
0796.79	A	50	6.96	8.21	2½-3½	$4s^4P-4p^4P^o$
0734.74	A	20	6.93	8.19	1½-1½	(2)
0608.97	A	3	6.91	8.19	½- ½	
0976.65	A	5	6.96	8.19	2½-1½	
0750.73	A	25	6.92	8.19	1½- ½	
0563.45	A	12	6.92	8.21	1½-2½	
0593.54	A	25	6.91	8.19	½-1½	
0525.78	A	30	6.96	8.25	2½-1½	$4s^4P-4p^4S^o$
0304.88	A	3	6.93	8.25	1½-1½	(3)
0175.85	A	0	6.91	8.25	½-1½	
0084.22	A	25	7.18	8.41	1½-1½	$4s^2P-4p^2P^o$
0903.74	A	8	7.14	8.39	½- ½	(4)
0204.72	A	2	7.18	8.39	1½- ½	
0790.08	A	3	7.14	8.41	½-1½	

P II I P 19.57 Anal B List B Aug 1944

3715.86	A	4	9.48	12.80	2-3	$3s3p^3\ ^3P^o-4p^3D$
3768.71	A	4	9.48	13.76	1-2	(1)
3795.10	A	3	9.48	12.74	0-1	
3761.82	A	3	9.48	12.76	2-2	
3793.61	A	3	9.48	12.74	1-1	
3786.70	A	2	9.48	12.74	2-1	
3472.88	A	5	9.48	13.03	2-2	$3s3p^3\ ^3P^o-4p^3P$
3503.00	A	5	9.48	13.00	2-1	(2)
3518.61	A	4nd?	9.48	12.99	1-0	
3478.74	A	3	9.48	13.03	1-2	
3419.25	A	6	9.48	13.09	2-1	$3s3p^3\ ^3P^o-4p^3S$
3424.88	A	6	9.48	13.09	1-1	(3)
3426.20	A	4	9.48	13.09	0-1	

Laboratory I A	Rsf	Int	E P Low	E P High	J	Multiplet (No)
P II continued						
3308.86	A	6w	9.59	13.32	2-2	$3s3p^3\ ^1P^o-4p^1D$ (4)
6043.10	B	(5)	10.76	12.80	2-3	$4s^3P^o-4p^3D$
6024.15	B	(3)	10.71	12.76	1-2	(5)
6034.01	B	(1)	10.69	12.74	0-1	
6165.56	B	(1)	10.76	12.76	2-2	
6087.76	B	(1)	10.71	12.74	1-1	
5425.93	A	7w	10.76	13.03	2-2	$4s^3P^o-4p^3P$
5386.87	A	7w	10.71	13.00	1-1	(6)
5499.73	A	7	10.76	13.00	2-1	
5409.66	A	7w	10.71	12.99	1-0	
5316.07	A	7W	10.71	13.03	1-2	
5344.73	A	7W	10.69	13.00	0-1	
5296.09	A	8W	10.76	13.09	2-1	$4s^3P^o-4p^3S$
5191.41	A	6	10.71	13.09	1-1	(7)
5152.30	A	4	10.69	13.09	0-1	
*?4720.26	A	3	10.71	13.32	1-2	$4s^3P^o-4p^1D$† (8)
4612.84	A	3	10.71	13.38	1-1	$4s^3P^o-4p^1P$
4581.77	A	3n	10.69	13.38	0-1	(9)
5253.49	A	8W	10.97	13.32	1-2	$4s^1P^o-4p^1D$ (10)
4499.18	A	7 1	10.97	13.72	1-0	$4s^1P^o-4p^1S$ (11)
*3551.16	A	3n	12.69	16.17	1-2	$3s3p^3\ ^1P^o-5$
3470.83	A	4	12.69	16.25	1-	(12) -8
*3404.34	A	5	12.69	16.32	1-2	-13
3377.52	A	4n	12.69	16.34	1-2	-18
4943.42	A	7 1	12.80	15.29	3-2	$4p^3D-5s^3P^o$
4969.65	A	7 1	12.76	15.24	2-1	(13)
4954.33	A	5 1	12.74	15.23	1-0	
4864.38	A	4 1	12.76	15.29	2-2	
4927.17	A	4 1	12.74	15.24	1-1	
4823.84	A	0	12.74	15.29	1-2	
4739.49	A	3 1	12.76	15.36	2-1	$4p^3D-5s^1P^o$
4700.80	A	4 1	12.74	15.36	1-1	(14)
4601.97	A	8 W1?	12.80	15.48	3-4	$4p^3D-4d^3F^o$
*4587.91§	A	8W	12.76	15.45	2-3	(15)
			12.74	15.43	1-2	
4658.12	A	6 1	12.80	15.45	3-3	
4626.61	A	5 1?	12.76	15.43	2-2	
4224.43	A	2	12.80	15.72	3-3	$4p^3D-4d^3D^o$
4072.13	A	3	12.76	15.79	2-2	(16)
4036.23	A	2n	12.74	15.79	1-1	
4137.49	A	5 1?	12.80	15.79	3-2	
4064.64	A	3 1?	12.76	15.79	2-1	
4166.73	A	2n	12.76	15.72	2-3	
4117.09	A	4	12.80	15.80	3-2	$4p^3D-4d^3P^o$
4130.78	A	2 n	12.76	15.75	2-1	(17)
4130.77	A	3 n1?	12.74	15.72	1-0	
4062.08	A	2 n	12.76	15.80	2-2	
4091.53	A	3 1d?	12.74	15.75	1-1	
4033.68	A	2	12.74	15.80	1-2	
3664.20	A	6w	12.79	16.16	2-2	$3d^3P^o-4$
3570.34	A	3d	12.79	16.25	2-2	(18) -9
3507.37	A	6wd?	12.79	16.31	2-	-12
*3478.74	A	3	12.79	16.34	2-1	-17
3775.03	A	3	12.81	16.08	1-2	$3d^3P^o-2$
3676.27	A	6w	12.81	16.17	1-2	(19) -5
3490.45	A	5	12.81	16.34	1-2	-18
3706.06	A	7w	12.83	16.16	1-2?	$3d^3D^o-4$
3536.30	A	3	12.83	16.32	1-2	(20) -14
3559.93	A	3	12.85	16.31	2-	$3d^3P^o-12$
3556.49	A	6	12.85	16.32	2-2	(21) -13
*3551.16	A	3n	12.85	16.32	2-2	-14
3533.67	A	2	12.85	16.34	2-	-16
3530.35	A	5	12.85	16.34	2-1	-17
3527.11	A	3	12.85	16.34	2-2	-18
*3404.34	A	5	12.85	16.47	2-1	-20
*3728.67§§	A	4d	12.85	16.16	3-2	$3d^3D^o-4$
3723.63	A	3	12.85	16.17	3-2	(22) -5
3631.41	A	4	12.85	16.25	3-2?	-9
3566.43	A	5	12.85	16.31	3-	-12
3562.48	A	3	12.85	16.32	3-2	-13
5450.66	A	6 1	13.03	15.29	2-2	$4p^3P-5s^3P^o$
5507.15	A	5 1	13.00	15.24	1-1	(23)
5583.33	A	5 1	13.03	15.24	2-1	
5541.19	A	4	13.00	15.23	1-0	
5378.12	A	3 1	13.00	15.29	1-2	
5483.56	A	5 1	12.99	15.24	0-1	
*4589.79	A	8 W	13.03	15.72	2-3	$4p^3P-4d^3D^o$
4425.95	A	2	13.00	15.79	1-2	(24)
4401.97	A	1 n	12.99	15.79	0-1	
4475.27	A	7 1	13.03	15.79	2-2	
4417.31	A	3	13.00	15.79	1-1	
4466.11	A	3	13.03	15.79	2-1	
4462.95	A	5	13.03	15.80	2-2	$4p^3P-4d^3P^o$
4483.67	A	3	13.00	15.75	1-1	(25)
4533.81	A	2	13.03	15.75	2-1	
*4530.78	A	7 1	13.00	15.72	1-0	
4414.29	A	6	13.00	15.80	1-2	
4467.98	A	4	12.99	15.75	0-1	

Laboratory I A	Rsf	Int	E P Low	E P High	J	Multiplet (No)
P II continued						
3827.46	A	7 1	13.08	16.31	2-2	$3d^1D^o-11$
						(26)
5588.25	A	5 1	13.09	15.29	1-2	$4p^3S-5s^3P^o$
5727.69	A	2 1	13.09	15.24	1-1	(27)
4554.81	A	6 1?	13.09	15.80	1-2	$4p^3S-4d^3P^o$
4628.71	A	4 1?	13.09	15.75	1-1	(28)
4678.95	A	6 1	13.09	15.72	1-0	
4558.04	A	6 1	13.09	15.79	1-1	$4p^3S-4d^3D^o$
						(29)
4244.55	A	3	13.25	16.16	3-2	$3d^1F^o-4$
4109.19	A	5	13.25	16.25	3-	(30) -10
4044.49	A	7w	13.25	16.31	3-2	-11
4019.45	A	4	13.25	16.32	3-3	-15
4452.45	A	6 1	13.38	16.15	1-	$3d^1P^o-3$
4423.9	A	3 d	13.38	16.17	1-1	(31) -6
4160.56	A	3	13.38	16.34	1-2	-18
6460.1	C	3	13.38	15.29	1-2	$4p^1P-5s^3P^o$
						(32)
4288.53	A	4	13.38	16.26	1-1	$4p^1P-4d^1P^o$
						(33)
3372.70	A	4	13.38	17.04	1-1	$4p^1P-6s^1P^o$
						(34)
*4587.91 §	A	8W	13.62	16.31	2-2	1^o-11
*4530.78	A	7 1	13.62	16.34	2-	(35)-16
4792.06	A	5 1	13.64	16.21	-2	2^o-7
4622.71	A	4 n	13.64	16.31	-2	(36)-11
*4589.79	A	8 W	13.64	16.32	-3	-15
4565.22	A	6 1	13.64	16.34	—	-16
3710.46	A	3n	13.72	17.04	0-1	$4p^1S-6s^1P^o$
						(37)

P III I P 30.03 Anal B List A Aug 1944

4059.27	A	6	14.43	17.47	2½-1½	$3^2D-4^2P^o$
4080.04	A	7	14.43	17.45	1½- ½	(1)
4057.39	A	4	14.43	17.47	1½-1½	
4222.15	A	7w	14.55	17.47	½-1½	$4^2S-4^2P^o$
4246.68	A	7w	14.55	17.45	½- ½	(3)
3233.62	A	6w	17.47	21.29	1½-	$4^2P^o-4^2D$
3219.32	A	6w	17.45	21.29	½-1½	(4)
3277.82	A	3	14.43	18.19	2½-2½	$3^2D-3p^3\ ^2D^o$
3283.22	A	2	14.43	18.19	1½-1½	(2)
5203.86	A	5	21.29	23.66	-1½	$4^2D-5^2P^o$
						(5)
3280.22	A	3n	21.29	25.05	—	$4^2D-5^2F^o$
						(6)
*4587.91 §	A	8W	22.05	24.74	—	$4^2F^o-5^2D$
						(7)
3978.28	A	8W	22.05	25.16	—	$4^2F^o-5^2G$
						(8)
3957.64	A	6	?	?	2½-3½	$3p4s^4P^o-3p4p^4P$
3933.38	A	4	?	?	1½-1½	(9)
3932.72	A	4	?	?	½- ½	
3997.17	A	5	?	?	2½-1½	
3951.51	A	5	?	?	1½- ½	
3895.03	A	6	?	?	1½-2½	
3904.79	A	6	?	?	½-1½	
3803.08	A	6	?	?	2½-1½	$3p4s^4P^o-3p4p^4S$
3744.22	A	5	?	?	1½-1½	(10)
*3717.63§§	A	5	?	?	½-1½?	

P IV I P 51.15 Anal B List B Aug 1944

3347.72	A	6	28.01	31.70	1-2	$4^3S-4^3P^o$
3364.44	A	6	28.01	31.68	1-1	(1)
3371.10	A	5	28.01	31.67	1-0	
4249.57	A	6	28.89	31.79	0-1	$4^1S-4^1P^o$
						(2)
*3728.67§§	A	4d	36.20	39.51	2-1	$4^3D-5^3P^o$
*3717.63§	A	5	36.20	39.52	2-2	(3)
3717.00		5	36.20	39.52	1-2	

P V I P 64.74 Anal A List A Aug 1944

3175.16	A	5	33.70	37.58	½-1½	$4^2S-4^2P^o$
3204.06	A	3	33.70	37.55	½- ½	(1)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
S I I P 10.31 Anal B List B Sept 1944						
9212.91	B	(10)	6.50	7.84	2-3	4^5S^o-4^5P
9228.11	B	(10)	6.50	7.83	2-2	(1)
9237.49	B	(10)	6.50	7.83	2-1	
4694.13	A	10	6.50	9.12	2-3	4^5S^o-5^5P
4695.45	A	8	6.50	9.12	2-2	(2)
4696.25	A	6	6.50	9.12	2-1	
10455.47	B	(8)	6.83	8.01	1-2	4^3S^o-4^3P
10459.46	B	(8)	6.83	8.01	1-1	(3)
10456.79	B	(4)	6.83	8.01	1-0	
5278.99	A	3	6.83	9.17	1-2	4^3S^o-5^3P
5278.70	A	1	6.83	9.17	1-1	(4)
5278.10	A	0	6.83	9.17	1-0	
4411.34	A	3	6.83	9.63	1-	4^3S^o-6^3P (5)
8694.70	A	10	7.84	9.35	3-4	4^5P-4^5D^o
8680.47	A	8	7.83	9.35	2-3	(6)
8671.37	A	1	7.83	9.36	1-2	
8693.98	A	3	7.84	9.35	3-3	
8679.70	A	2	7.83	9.36	2-2	
8670.65	A	2	7.83	9.36	1-1	
8693.24	A	1	7.84	9.36	3-2	
8679.00	A	1	7.83	9.36	2-1	
8670.19	A	1	7.83	9.36	1-0	
7696.73	A	10	7.84	9.44	3-2	4^5P-6^5S^o
7686.13	A	8	7.83	9.44	2-2	(7)
7679.60	A	5	7.83	9.44	1-2	
6757.16	A	10	7.84	9.66	3-	4^5P-5^5D^o
6748.79	A	8	7.83	9.66	2-	(8)
6743.58	A	6	7.83	9.66	1-	
6415.50	A	3	7.84	9.76	3-2	4^5P-7^5S^o
6408.13	A	2	7.83	9.76	2-2	(9)
6403.58	A	1	7.83	9.76	1-2	
6052.66	A	10	7.84	9.87	3-	4^5P-6^5D^o
6046.04	A	5	7.83	9.87	2-	(10)
6041.93	A	3	7.83	9.87	1-	
5706.11	A	6	7.84	10.00	3-	4^5P-7^5D^o
5700.24	A	4	7.83	10.00	2-	(11)
5696.63	A	2	7.83	10.00	1-	
5507.01	A	4	7.84	10.08	3-	4^5P-8^5D^o
5501.54	A	3	7.83	10.08	2-	(12)
5498.18	A	2	7.83	10.08	1-	
9035.92	B	(6)	8.01	9.38	2-3	4^3P-4^3D^o
9036.32	B	(4)	8.01	9.38	1-2	(13)
9038.72	B	(3)	8.01	9.38	0-1	
9039.27	B	(3)	8.01	9.38	2-2	
9036.73	B	(2)	8.01	9.38	1-1	
8452.14	A	5	8.01	9.47	2-1	4^3P-6^3S^o
8449.54	A	3	8.01	9.47	1-1	(14)
8451.55	A	1	8.01	9.47	0-1	
*7244.77	A	4	(8.01	9.71	2-3	4^3P-5^3D^o †
			8.01	9.71	2-2	(15)
*9949.84	B	(8)	(8.37	9.62	3-2	3^3D^o-$4p'\ ^3P$†
			8.37	9.61	1-0	(16)
9932.26	B	(8)	8.37	9.62	2-2	
*9633.78	B	(5)	(8.37	9.66	3-4	3^3D^o-$4p'\ ^3F$
			8.37	9.65	2-3	(17)
9672.34	B	(10)	8.37	9.65	1-2	
9649.94	B	(12)	8.37	9.65	3-3	
9680.80	B	(10)	8.37	9.65	2-2	
9697.33	B	(8)	8.37	9.65	3-2	
9413.46	B	(8)	8.37	9.69	3-3	3^3D^o-$4p'\ ^3D$†
9421.93	B	(8)	8.37	9.68	2-2	(18)
*9437.11	B	(8)	(8.37	9.68	1-1	
			8.37	9.68	3-2	
11453	B	(1)	8.38	9.46	4-	3^5D^o-4^5F
11472	B)	(1n)	(8.38	9.46	3-	(19)
11464	B'		8.38	9.46	0-	
9693.68	B	(10)	8.38	9.70	3-3	3^5D^o-$4p'\ ^3F$†
9739.74	B	(8)	8.38	9.69	2-2	(20)
9741.93	B	(5)	8.38	9.69	3-2	
8874.53	B	(9)	8.38	9.77	4-	3^5D^o-5^5F †
8884.23	B	(7)	8.38	9.77	3-	(21)
8882.47	B	(5)	8.38	9.77	2-	
8880.70	B	(3)	8.38	9.77	1-	
7923.95	A	15	8.38	9.94	4-	3^5D^o-6^5F †
7931.70	A	10	8.38	9.94	3-	(22)
7930.33	A	8	8.38	9.94	2-	
7928.84	A	6	8.38	9.94	1-	

Strongest Unclassified Lines of **S I**

9958.90	B	(8)
8585.60	A	10
7629.82	A	10
7578.96	A	10
4993.51	A	8
3867.56	A	8

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
S II I P 23.3 Anal B List A Sept 1944						
5027.19	D	2	13.04	15.49	1½- ½	$3s3p^4\ ^2P$-$4p^3S^o$
5142.33	D	1	13.09	15.49	½- ½	(1)
4131.0	A	00	13.04	16.03	1½-1½	$3s3p^4\ ^2P$-$4p^4P^o$
3906.95	A	1	13.04	16.20	1½-2½	$3s3p^4\ ^2P$-$4p^2D^o$ (3)
3595.991	A	4	13.04	16.47	1½-1½	$3s3p^4\ ^2P$-$4p^2P^o$
3672.14	A	2	13.09	16.45	½- ½	(4)
3613.03	A	0	13.04	16.45	1½- ½	
3654.51	A	1	13.09	16.47	½-1½	
6386.48	D	2	13.56	15.49	1½- ½	$4s^4P$-$4p^3S^o$ (5)
5453.81	C	15	13.61	15.88	2½-3½	$4s^4P$-$4p^4D^o$
5432.77	C	12	13.56	15.83	1½-2½	(6)
5428.64	C	9	13.53	15.80	½-1½	
5564.94	C	8	13.61	15.83	2½-3½	
5509.67	C	15	13.56	15.80	1½-1½	
5473.59	C	15	13.53	15.78	½- ½	
5645.62	D	4	13.61	15.80	2½-1½	
5556.01	C	5	13.56	15.78	1½- ½	
5032.41	C	2	13.61	16.07	2½-2½	$4s^4P$-$4p^4P^o$
4991.94	C	1	13.56	16.03	1½-1½	(7)
4942.47	C	(1)	13.53	16.02	½- ½	
5103.30	C	1	13.61	16.03	2½-1½	
5009.54	C	1	13.56	16.02	1½- ½	
4934.08	C	9	13.56	16.07	1½-2½	
4925.32	C	10	13.53	16.03	½-1½	
4779.11	A	2	13.61	16.20	2½-2½	$4s^4P$-$4p^3D^o$
4804.13	A	00	13.61	16.13	1½-1½	(8)
4681.32	A	00	13.56	16.20	1½-2½	
4742.4	A	00	13.53	16.13	½-1½	
4815.515	A	10	13.61	16.18	2½-1½	$4s^4P$-$4p^4S^o$
4716.226	A	8	13.56	16.18	1½-1½	(9)
4656.74	A	4	13.53	16.18	½-1½	
4193.51	A	1	13.56	16.45	½-1½	$4s^4P$-$4p^3P^o$ (10)
5606.11	C	15	13.67	15.88	4½-3½	$3d^4F$-$4p^4D^o$
5640.32	C	10	13.64	15.83	3½-2½	(11)
5659.95	C	12	13.62	15.80	2½-1½	
5664.73	C	10	13.60	15.78	1½- ½	
5526.22	C	6	13.64	15.88	3½-3½	
5578.85	C	7	13.62	15.83	2½-2½	
5616.63	C	5	13.60	15.80	1½-1½	
5466.55	E	(0)	13.62	15.88	2½-3½?	
5536.77	D	1	13.60	15.83	1½-2½	
8314.73	B	10	14.01	15.49	1½- ½	$4s^2P$-$4p^2S^o$
7967.43	B	10	13.94	15.49	½- ½	(12)
5996.16	D	4	14.01	16.07	1½-2½	$4s^2P$-$4p^4P^o$
5908.25	D	2	13.94	16.03	½-1½	(13)
6097.12	D	1	14.01	16.03	1½-1½	
5932.95	D	1	13.94	16.02	½- ½	
6123.41	D	1	14.01	16.02	1½- ½	
5639.96	C	10	14.01	16.20	1½-2½	$4s^2P$-$4p^2D^o$
5646.98	C	8	13.94	16.13	½-1½	(14)
5819.22	C	10	14.01	16.13	1½-1½	
5014.03	C	1	14.01	16.47	1½-1½	$4s^2P$-$4p^2P^o$
4917.15	C	7	13.94	16.45	½- ½	(15)
5047.38	C	(0)	14.01	16.45	1½- ½	
4885.63	A	2	13.94	16.47	½-1½	
3669.049	A	5	14.01	17.37	1½-2½	$4s^2P$-$4p'\ ^2D^o$
3594.462	A	3	13.94	17.38	½-1½	(16)
3663.47	A	0	14.01	17.38	1½-1½	
3314.50	A	0	14.01	17.73	1½-1½	$4s^2P$-$4p'\ ^2P^o$
3272.25	D	3	13.94	17.71	½- ½	(17)
3329.3	A	00	14.01	17.71	1½- ½	
3257.83	D	2	13.94	17.73	½-1½	
6981.40	D	4	14.11	15.88	3½-3½	$3d^4D$-$4p^4D^o$
7139.79	B	1	14.10	15.83	2½-2½	(18)
7256.96	B	1	14.10	15.80	1½-1½	
7317.03	B	0	14.09	15.78	½- ½	
7164.63	D	2	14.11	15.83	3½-2½	
7273.20	B	1	14.10	15.80	2½-1½	
7337.61	B	0	14.10	15.78	1½- ½	
6957.95	D	1	14.10	15.88	2½-3½	
7124.88	D	1	14.10	15.83	1½-2½	
7236.91	B	0	14.09	15.80	½-1½	
6305.51	D	10	14.11	16.07	3½-2½	$3d^4D$-$4p^4P^o$
6397.30	D	8	14.10	16.03	2½-1½	(19)
6413.71	D	9	14.10	16.02	1½- ½	
6286.35	D	8	14.10	16.07	2½-2½	
6384.89	D	8	14.10	16.03	1½-1½	
6398.05	D	8	14.09	16.02	½- ½	
6274.34	D	3	14.10	16.07	1½-2½	
6369.34	D	4	14.09	16.03	½-1½	
6092.13	D	2	14.10	16.13	2½-1½	$3d^4D$-$4p^2D^o$
5895.89	D	0	14.10	16.20	2½-2½	(20)
6080.85	D	1	14.10	16.13	1½-1½	
5951.30	D	3	14.10	16.18	2½-1½	$3d^4D$-$4p^4S^o$
5940.69	D	1	14.10	16.18	1½-1½	(21)
5937.15	D	1	14.09	16.18	½-1½	
3845.21	A	00	14.10	17.31	2½-2½	$3d^4D$-$4p'\ ^2F^o$ (22)
3782.6	A	00	14.11	17.37	3½-2½	$3d^4D$-$4p'\ ^2D^o$ (23)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
S II continued						
7509.03	B	0	14.23	15.88	3½-3½	$3d^2F$-$4p^4D^o$ (24)
6732.88	D	0	14.23	16.07	3½-2½	$3d^2F$-$4p^4P^o$
6641.06	D	1	14.17	16.03	2½-1½	(25)
6521.39	D	1	14.17	16.07	2½-2½	
6287.06	D	10	14.23	16.20	3½-2½	$3d^2F$-$4p^2D^o$
6312.68	D	10	14.17	16.13	2½-1½	(26)
6102.26	D	4	14.17	16.20	2½-2½	
6161.84	D	1	14.17	16.18	2½-1½	$3d^2F$-$4p^4S^o$ (27)
6314.29	D	1	14.23	16.19	3½-	$3d^2F$-Y^o
6128.21	D	0	14.17	16.19	2½-	(28)
3993.526	A	4	14.23	17.32	3½-3½	$3d^2F$-$4p'\ ^2P^o$
3931.938	A	3	14.17	17.31	2½-2½	(29)
4007.78	A	0	14.23	17.31	3½-2½	
3918.19	A	00	14.17	17.32	2½-3½	
3932.30	A	2	14.23	17.37	3½-2½	$3d^2F$-$4p'\ ^2P^o$
3853.09	A	2	14.17	17.38	2½-1½	(30)
3859.26	A	0	14.17	17.37	2½-2½	
7821.47	B	0	14.30	15.88	2½-3½	$3d^4P$-$4p^4D^o$
8086.67	B	0	14.30	15.83	1½-2½	(31)
8273.46	B	0	14.31	15.80	½-1½	
8051.91	B	0	14.30	15.83	2½-2½	
8258.27	B	2	14.30	15.80	1½-1½	
8377.79	B	1	14.31	15.78	½- ½	
8221.63	B	0	14.30	15.80	2½-1½	
8361.95	B	1	14.30	15.78	1½- ½	
4431.02	A	1	14.59	17.37	1½-2½	$3d^2P$-$4p'\ ^2P^o$ (32)
3924.05	A	00	14.59	17.73	1½-1½	$3d^2P$-$4p'\ ^2P^o$
3945.06	E	(0)	14.59	17.71	1½- ½?	(33)
8520.23	B	1	14.73	16.18	2½-1½	$3d^2D$-$4p^4S^o$ (34)
4755.12	A	2	14.73	17.32	2½-3½	$3d^2D$-$4p'\ ^2P^o$
4763.38	A	1	14.72	17.31	1½-2½	(35)
4668.58	A	3	14.73	17.37	2½-2½	$3d^2D$-$4p'\ ^2P^o$
4648.17	A	2	14.72	17.38	1½-1½	(36)
8422.39	B	0	15.00	16.47	2½-1½	$4s'\ ^2D$-$4p^3P^o$
8515.48	B	0	15.00	16.45	1½- ½	(37)
5320.70	C	3	15.00	17.32	2½-3½	$4s'\ ^2D$-$4p'\ ^2P^o$
5345.67	C	4	15.00	17.31	1½-2½	(38)
5212.61	C	3	15.00	17.37	2½-2½	$4s'\ ^2D$-$4p'\ ^2D^o$
5201.00	C	2	15.00	17.38	1½-1½	(39)
5201.32	E	(2)	15.00	17.38	2½-1½	
4524.946	A	6	15.00	17.73	2½-1½	$4s'\ ^2D$-$4p'\ ^2P^o$
*4552.378	A	7	15.00	17.71	1½- ½	(40)
4524.68	A	2	15.00	17.73	1½-1½	
3783.16	A	2	15.49	18.75	½-1½	$4p^2S^o$-$5s^2P$
3860.15	A	2	15.49	18.69	½- ½	(41)
3317.70	D	0	15.49	19.31	½- ½	$4p^2S^o$-$4d^2P$ (42)
4463.582	A	7	15.88	18.64	3½-2½	$4p^4D^o$-$5s^4P$
4483.424	A	6	15.83	18.58	2½-1½	(43)
4486.66	A	3	15.80	18.55	1½- ½	
4391.84	A	3	15.83	18.64	2½-2½	
4432.41	A	3	15.80	18.58	1½-1½	
4456.43	A	2	15.78	18.55	½- ½	
4343.84	A	00	15.80	18.64	1½-2½	
4402.86	A	0	15.78	18.58	½-1½	
*4162.698	A	10	15.88	18.84	3½-4½	$4p^4D^o$-$4d^4F$
4153.098	A	10	15.83	18.80	2½-3½	(44)
4145.100	A	9	15.80	18.78	1½-2½	
4142.291	A	8	15.78	18.76	½-1½	
4217.23	A	3	15.88	18.80	3½-3½	
*4189.71	A	6n	15.83	18.78	2½-2½	
4168.409	A	5	15.80	18.76	1½-1½	
4255.01	B	0	15.88	18.78	3½-2½	
4213.5	A	00	15.83	18.76	2½-1½	
4028.791	A	7	15.88	18.94	3½-3½	$4p^4D^o$-$4d^4D$
3990.94	A	3	15.83	18.92	2½-2½	(45)
3963.13	A	2	15.80	18.91	1½-1½	
3946.98	A	1	15.78	18.91	½- ½	
4050.11	A	1	15.88	18.92	3½-2½	
4003.89	A	1	15.83	18.91	2½-1½	
*3970.69	A	1	15.80	18.91	1½- ½	
3950.42	A	00	15.80	18.92	1½-2½	
3939.49	A	00	15.78	18.91	½-1½	
4792.02	A	3	16.07	18.64	2½-2½	$4p^4P^o$-$5s^4P$
4835.85	A	00	16.03	18.58	1½-1½	(46)
4883.73	B	1	16.02	18.55	½- ½	
4901.30	C	1	16.07	18.58	2½-1½	
4900.47	C	2	16.03	18.55	1½- ½	
4729.45	A	0	16.03	18.64	1½-2½	
*4819.60	A	2n	16.02	18.58	½-1½	
4590.8	A	00	16.07	18.75	2½-1½	$4p^4P^o$-$5s^2P$
4533.3	A	00	16.03	18.75	1½-1½	(47)
4518.9	A	00	16.02	18.75	½-1½	
*4552.378	A	7	16.07	18.78	2½-2½	$4p'^4P^o$-$4d^4F$
4495.9	A	00	16.03	18.78	1½-2½	(48)
4509.0	A	00	16.02	18.76	½-1½	

I A	Laboratory Ref	Int	E P Low	E P High	J	Multiplet (No)
S II continued						
4294.432	A	8	16.07	18.94	2½-3½	$4p^4P^o$-$4d^4D$ (49)
4267.802	A	5	16.03	18.92	1½-2½	
4269.76	A	3	16.02	18.91	½-1½	
4318.68	A	4	16.07	18.92	2½-2½	
4282.63	A	3	16.03	18.91	1½-1½	
4278.54	A	3	16.02	18.91	½- ½	
4333.84	A	0	16.07	18.91	2½-1½	
4291.45	A	1	16.03	18.91	1½- ½	
3892.321	A	5	16.07	19.24	2½-2½	$4p^4P^o$-$4d^4P$ (50)
3792.46	B	5	16.02	19.28	½- ½	
3880.64 §	A	3	18.07	19.26	2½-1½	
3802.65	A	1	16.03	19.28	1½- ½	
3850.93	A	2	16.03	19.24	1½-2½	
3809.87	A	1	16.02	19.26	½-1½	
3776.80	A	00	18.07	19.33	2½-3½	$4p^4P^o$-$4d^2F$ (51)
4824.07	A	3	16.20	18.75	2½-1½	$4p^2D^o$-$5s^2P$ (52)
4819.60	A	2n	16.13	18.69	1½- ½	
4700.21	A	00	16.13	18.75	1½-1½	
4497.88	A	00	16.20	18.94	2½-3½	$4p^2D^o$-$4d^4D$ (53)
4415.37	D	00	16.13	18.92	1½-2½	
4058.7	A	00	16.20	19.24	2½-2½	$4p^2D^o$-$4d^4P$ (54)
3970.69	A	1	16.13	19.24	1½-2½	
3933.294	A	9	16.20	19.33	2½-3½	$4p^2D^o$-$4d^2F$ (55)
3923.483	A	7	16.13	19.27	1½-2½	
4009.39	A	0	16.20	19.27	2½-2½	
3616.916	A	5	16.20	19.61	2½-2½	$4p^2D^o$-$4d^2D$ (56)
3567.171	A	3	16.13	19.59	1½-1½	
5006.71	C	(2)	16.18	18.64	1½-2½	$4p^4S^o$-$5s^4P$ (57)
5136.13	B	2	16.18	18.58	1½-1½	
5198.89	B	1	16.18	18.55	1½- ½	
4492.3	A	00	16.18	18.92	1½-2½	$4p^4S^o$-$4d^4D$ (58)
4032.812	A	7	16.18	19.24	1½-2½	$4p^4S^o$-$4d^4P$ (59)
3998.79	A	3	16.18	19.26	1½-1½	
3979.86	A	3	16.18	19.28	1½- ½	
3932.63	A	00	16.19	19.33	-3½†	$^2Y^o$-$4d^2F$ (60)
5400.67	E	0	16.47	18.75	1½-1½	$4p^2P^o$-$5s^2P$ (61)
5518.74	D	3	16.45	18.69	½- ½	
5559.06	D	2	16.47	18.69	1½- ½	
5362.69	B	1	16.45	18.75	½-1½	
8425.37	B	0	17.31	18.78	2½-2½	$4p'\ ^2F^o$-$4d^4F$ (62)
8522.64	B	0	17.31	18.76	2½-1½	
6138.98	D	4	17.32	19.33	3½-3½	$4p'\ ^2F^o$-$4d^2F$ (83)
6336.43	D	00	17.32	19.27	3½-2½	
4189.71	A	6n	17.32	20.27	3½-3½	$4p'\ ^2F^o$-$4d'\ ^2F$ (64)
4165.11	A	1	17.31	20.27	2½-2½	
4180.7	A	00	17.32	20.27	3½-2½	
4174.043	A	4	17.31	20.27	2½-3½	
4162.698	A	10	17.32	20.29	3½-4½	$4p'\ ^2F^o$-$4d'\ ^2G$ (85)
4146.94	A	3	17.31	20.29	2½-3½	
4162.39	A	2	17.32	20.29	3½-3½	
4359.18	A	2	17.37	20.27	2½-3½	$4p'\ ^2D^o$-$4d'\ ^2F$ (66)
4357.42	A	3	17.38	20.27	1½-2½	
4349.92	A	0	17.37	20.27	2½-2½	
4230.98	A	4	17.37	20.29	2½-3½	$4p'\ ^2D^o$-$4d'\ ^2G$ (67)
8223.16	B	1	18.84	20.34	4½-3½	$4d^4F$-$5p^4D^o$ (68)
8233.30	B	0	18.80	20.30	3½-2½	
8223.16	B	1	18.78	20.28	2½-1½	
8223.15	B	1	18.76	20.26	1½- ½	
8018.70	B	1	18.80	20.34	3½-3½	
8093.35	B	0	18.78	20.30	2½-2½	
8133.02	B	0	18.78	20.28	1½-1½	
7885.26	B	1	18.78	20.34	2½-3½	
8005.24	B	1	18.76	20.30	1½-2½	
8225.15	B	2	18.80	20.30	3½-2½	$4d^4F$-$5p^4P^o$ (69)
8179.31	B	2	18.78	20.28	2½-1½	
8114.93	B	0	18.76	20.29	1½- ½	
8085.29	B	0	18.78	20.30	2½-2½	
8089.86	B	0	18.76	20.28	1½-1½	
7997.85	B	0	18.76	20.30	1½-2½	
7745.05	B	00	18.78	20.37	2½-1½	$4d^4F$-$5p^4S^o$ (70)
7665.02	B	0	18.76	20.37	1½-1½	

Strongest Unclassified Lines of S II

3395.27	D	6	3911.32	A	1
4634.11	A	1	3831.41	A	3
4591.05	A	3n	3811.80	A	1n
4561.88	A	2	3730.64	A	1
4549.547	A	5	3878.13	A	1
4464.425	A	8	3385.81	A	2
4360.49	A	1	3371.90	A	1
4185.95	A	1	3368.09	A	1
4174.300	A	6	3356.41	A	1

I A	Laboratory Ref	Int	E P Low	E P High	J	Multiplet (No)
S III I P 34.9 Anal C List A Oct 1944						
3632.022	A	8	17.67	21.07	2-3	$3d^3P^o$-$4p^3D$ (1)
3709.371	A	5	17.87	20.99	1-2	
3747.90	A	3	17.67	20.96	0-1	
3710.43	A	0	17.67	20.99	2-2	
3750.74	A	1	17.67	20.96	1-1	
3324.87	A	4	17.67	21.38	2-2	$3d^3P^o$-$4p^3P$ (2)
3369.49	A	1	17.67	21.33	1-1	
3370.38	A	2	17.67	21.33	2-1	
3387.13	A	2	17.67	21.31	1-0	
3324.01	A	2	17.67	21.38	1-2	
3367.18	A	2	17.67	21.33	0-1	
3234.17	B	(4)	17.67	21.48	2-1	$3d^3P^o$-$4p^3S$ (3)
3233.24	B	(3)	17.67	21.48	1-1	
3231.10	B	(3)	17.87	21.48	0-1	
4253.593	A	9	18.17	21.07	2-3	$4s^3P^o$-$4p^3D$ (4)
4284.991	A	5	18.11	20.99	1-2	
4332.71	A	4	18.11	20.96	0-1	
4381.53	A	2	18.17	20.99	2-2	
4340.30	A	2	18.11	20.96	1-1	
4418.84	A	00	18.17	20.96	2-1	
3838.316	A	6	18.17	21.38	2-2	$4s^3P^o$-$4p^3P$ (5)
3837.80	A	3	18.11	21.33	1-1	
3899.09	P		18.17	21.33	2-1	
•3860.64 §	A	3	18.11	21.31	1-0	
3778.90	A	1	18.11	21.38	1-2	
3831.85	A	2	18.11	21.33	0-1	
3717.775	A	8	18.17	21.48	2-1	$4s^3P^o$-$4p^3S$ (6)
3682.005	A	4	18.11	21.48	1-1	
3656.61	A	1	18.11	21.48	0-1	
4364.73	A	1	18.24	21.07	3-3	$3d^3D^o$-$4p^3D$ (7)
4467.83	B	(1)	18.23	20.99	2-2	
4499.29	B	(0)	18.23	20.96	1-1	
4478.48	A	00	18.24	20.99	3-2	
4527.96	B	(0)	18.23	20.96	2-1	
4354.56	A	2	18.23	21.07	2-3	
4439.87	A	1	18.22	20.99	1-2	
3938.615	A	6	18.24	21.38	3-2	$3d^3D^o$-$4p^3P$ (8)
3983.77	A	3	18.23	21.33	2-1	
3985.97	A	2	18.22	21.31	1-0	
3920.37	B	(0)	18.23	21.38	2-2	
3961.55	A	2	18.22	21.33	1-1	
3794.69	A	2	10.38	21.48	2-1	$3d^3D^o$-$4p^3S$ (9)
3774.52	A	00	10.37	21.48	1-1	
4613.47	A	00	18.32	20.99	1-2	$4s^1P^o$-$4p^3D$ (10)
4677.67	A	0	18.32	20.96	1-1	
4099.25	A	00	18.32	21.33	1-1	$4s^1P^o$-$4p^3P$ (11)
4135.4	A	00	18.32	21.31	1-0	
3899.27	A	00	18.32	21.48	1-1	$4s^1P^o$-$4p^3S$ (12)
3136.00	B	(3)	21.38	25.32	2-3	$4p^3P$-$4d^3F^o$ (13)
3185.16	B	(3)	21.38	25.26	2-2	
2985.98	B	(8)	21.38	25.51	2-2	$4p^3P$-$4d^3P^o$ (14)

Strongest Unclassified Lines Attributed to S III

4802.81	A	0			
4283.70	A	0			
4164.96	A	0			
4148.91	A	1			
4137.54	A	0			
4111.56	A	3			
4099.44	A	1			
4095.17	A	0			
4064.45	A	2			
3997.97	A	0			
3748.73	A	0			
3699.37	A	1			
3697.88	A	0			
3638.15	A	0			
3626.53	A	0			
3549.72	A	1			
3497.340	A	5			

I A	Laboratory Ref	Int	E P Low	E P High	J	Multiplet (No)
S IV I P 47.1 Anal C List A Aug 1944						
3097.46	A	5	22.40	28.38	½-1½	4^3S-4^3P^o (1)
3117.75	A	3	22.40	26.36	½- ½	

I A	Laboratory Ref	Int	E P Low	E P High	J	Multiplet (No)
Cl I I P 12.9 Anal B List C Oct 1944						
9121.10	A	75	8.88	10.24	2½-2½	$4s^4P$-$4p^4P^o$ (1)
9393.81	A	50	8.95	10.28	1½-1½	
9486.89	A	25	8.99	10.29	½- ½	
8948.01	A	50	8.88	10.26	2½-1½	
9191.87	A	60	8.95	10.29	1½- ½	
9584.77	A	50	8.95	10.34	1½-2½	
9702.35	A	40	8.99	10.26	½-1½	
8375.95	A	150	8.88	10.36	2½-3½	$4s^4P$-$4p^4D^o$ (2)
8585.96	A	100	8.95	10.39	1½-2½	
8575.25	A	75	8.99	10.43	½-1½	
8212.00	A	100	8.88	10.39	2½-2½	
8333.29	A	100	8.95	10.43	1½-1½	
8428.25	A	100	8.99	10.45	½- ½	
7980.58	A	15	8.88	10.43	2½-1½	
8194.35	A	50	8.95	10.45	1½- ½	
7878.22	A	75	8.88	10.45	2½-2½	$4s^4P$-$4p^2D^o$ (3)
7997.80	A	50	8.95	10.49	1½-1½	
7672.44	A	25	8.88	10.49	2½-1½	
8221.73	A	75	8.95	10.45	1½-2½	
8220.40	A	60	8.99	10.49	½-1½	
7414.10	A	90	8.88	10.55	2½-1½	$4s^4P$-$4p^2P^o$† (4)
7717.57	A	100	8.95	10.55	1½-1½	
7924.62	A	100	8.99	10.55	½-1½	
7256.63	A	125	8.88	10.58	2½-1½	$4s^4P$-$4p^4S^o$ (5)
7547.06	A	100	8.95	10.58	1½-1½	
7744.94	A	125	8.99	10.58	½-1½	
4438.48	A	20	8.88	11.66	2½-2½	$4s^4P$-$5p^4P^o$† (6)
4403.03	A	15	8.88	11.69	2½-1½	
4389.76	A	25	8.88	11.69	2½-3½	$4s^4P$-$5p^4D^o$† (7)
4475.31	A	15	8.95	11.71	1½-3½	
4379.90	A	20	8.95	11.77	1½-1½	
4363.30	A	20	8.95	11.78	1½-2½	$4s^4P$-$5p^2D^o$† (8)
4369.52	A	15	8.99	11.81	½-1½	
4226.44	A	15	8.88	11.80	2½-1½	$4s^4P$-$5p^4S^o$† (9)
4323.35	A	20	8.95	11.80	1½-1½	
10091.64	A	40	9.16	10.39	1½-2½	$4s^2P$-$4p^4D^o$† (10)
10392.45	A	5	9.24	10.43	½-1½	
9744.33	A	30	9.16	10.43	1½-1½	
9593.20	A	75	9.16	10.45	1½-2½	$4s^2P$-$4p^2D^o$ (11)
9875.95	A	50	9.24	10.49	½-1½	
9288.82	A	60	9.16	10.49	1½-1½	
9073.15	A	50	9.16	10.52	1½- ½	$4s^2P$-$4p^2S^o$ (12)
9632.37	A	20	9.24	10.52	½- ½	
8912.88	A	40	9.16	10.55	1½-1½	$4s^2P$-$4p^2P^o$ (13)
9045.40	A	40	9.24	10.61	½- ½	
8550.46	A	20	9.16	10.61	1½- ½	
9452.06	A	75	9.24	10.55	½-1½	
8686.28	A	30	9.16	10.58	1½-1½	$4s^2P$-$4p^4S^o$ (14)
9197.49	A	25	9.24	10.58	½-1½	
4526.20	A	30	9.16	11.89	1½-1½	$4s^2P$-$5p^2P^o$ (15)
4601.00	A	20	9.24	11.92	½- ½	
4469.37	A	18	9.16	11.92	1½- ½	
4661.32	A	18	9.24	11.89	½-1½	

I A	Laboratory Ref	Int	E P Low	E P High	J	Multiplet (No)
Cl II I P 23.70 Anal A List B Nov 1944						
4794.54	A	250	13.32	15.89	2-3	$4s^5S^o$-$4p^5P$ (1)
4810.06	A	225	13.32	15.88	2-2	
4819.46	A	200	13.32	15.88	2-1	
5423.25	A	150	13.62	15.89	4-3	$3d^5D^o$-$4p^5P$ (2)
5443.42	A	100	13.62	15.88	3-2	
5456.27	A	50	13.62	15.88	2-1	
5423.52	A	100	13.62	15.89	3-3	
5444.25	A	60	13.62	15.88	2-2	
5457.02	A	75	13.62	15.88	1-1	
5434.36	A	25	13.62	15.89	2-3	
5444.99	A	10	13.62	15.88	1-2	
5457.47	A	30	13.62	15.88	0-1	
•5217.93	A	150	13.90	16.27	1-2	$4s^3S^o$-$4p^3P$ (3)
5221.34	A	75	13.90	16.27	1-1	
•5217.93	A	150	13.90	16.27	1-0	
3353.39	A	125	14.28	17.96	1-1	$3s3p^5\ ^1P^o$-$4p'\ ^1P$ (4)
8360.63	A	15	14.79	16.27	3-2	$3d^3D^o$-$4p^3P$† (5)
3750.00	A	30	14.79	18.08	3-3	$3d^3D^o$-$4p'\ ^3D$ (6)
3767.57	A	30	14.79	18.06	2-2	
3774.25	A	25	14.79	18.06	1-1	
3769.13	A	20	14.79	18.06	3-2	
3768.13	A	18	14.79	18.06	2-1	
3748.46	A	15	14.79	18.08	2-3	
3773.68	A	20	14.79	18.06	1-2	
3650.13	A	30	14.79	18.17	3-4	$3d^3D^o$-$4p'\ ^3F$† (7)
3658.38	A	20	14.79	18.16	2-3	
3673.83	A	18	14.79	18.15	1-2	
3659.84	A	18	14.79	18.16	3-3	
3668.03	A	20	14.79	18.15	2-2	
3333.64	A	40	14.79	18.49	3-2	$3d^3D^o$-$4p'\ ^3P$† (8)
•3315.44	A	100	14.79	18.51	2-1	
3312.78	A	15	14.79	18.52	1-0	
3332.42	A	15	14.79	18.49	2-2	
3320.14	A	30	14.79	18.51	1-1	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Cl II continued						
3829.27	A	15	15.00	18.22	2-3	3d' $^1D^o$-4p' ^1F (9)
3147.86	A	20	15.00	18.92	2-2	3d' $^1D^o$-4p' ^1D (10)
3161.44	A	20	15.02	18.92	3-2	3d' $^1F^o$-4p' ^1D (11)
4995.52	A	60	15.61	18.08	4-3	3d' $^3F^o$-4p' ^3D† (12)
4970.12	A	50	15.58	18.06	3-2	
4925.17	A	15	15.56	18.06	2-1	
4936.99	A	25	15.58	18.08	3-3	
4924.28	A	18	15.56	18.06	2-2	
4819.79	A	25	15.61	18.17	4-4	3d' $^3F^o$-4p' ^3F (13)
4781.82	A	50	15.58	18.16	3-3	
4755.64	A	50	15.56	18.15	2-2	
4836.79	A	20	15.61	18.16	4-3	
4798.40	A	15	15.58	18.15	3-2	
4765.30	A	10	15.58	18.17	3-4	
4739.42	A	10	15.56	18.16	2-3	
3092.22	A	50	15.61	19.60	4-3	3d' $^3F^o$-4p" ^3D† (14)
3071.35	A	40	15.58	19.60	3-2	
3058.00	A	40	15.56	19.59	2-1	
3053.74	A	10	15.56	19.60	2-2	
5333.70	A	15	15.64	17.96	1-1	4s' $^3D^o$-4p' ^1P† (15)
5078.25	A	150	15.65	18.08	3-3	4s' $^3D^o$-4p' ^3D (16)
5103.04	A	125	15.65	18.06	2-2	
5099.30	A	100	15.64	18.06	1-1	
5113.36	A	40	15.65	18.06	3-2	
5104.08	A	25	15.65	18.06	2-1	
5068.10	A	10	15.65	18.08	2-3	
5098.34	A	20	15.64	18.06	1-2	
4896.77	A	200	15.65	18.17	3-4	4s' $^3D^o$-4p' ^3F† (17)
4904.76	A	135	15.65	18.16	2-3	
4917.72	A	125	15.64	18.15	1-2	
4914.32	A	12	15.65	18.16	3-3	
4922.14	A	20	15.65	18.15	2-2	
4792.04	A	12	15.65	18.22	2-3	4s' $^3D^o$-4p' ^1F (18)
4343.62	A	100	15.65	18.49	3-2	4s' $^3D^o$-4p' ^3P† (19)
4307.42	A	75	15.65	18.51	2-1	
4291.76	A	50	15.64	18.52	1-0	
4336.26	A	45	15.65	18.49	2-2	
4304.07	A	40	15.64	18.51	1-1	
3123.72	A	15	15.65	19.60	3-3	4s' $^3D^o$-4p" ^3D† (20)
3121.62	A	10	15.65	19.60	2-2	
*3119.82	A	12	(15.65	19.60	2-3	
			15.64	19.60	1-2	
3045.00	A	10	15.65	19.70	2-2	4s' $^3D^o$-4p" ^1D (21)
2996.63	A	40	15.65	19.77	3-2	4s' $^3D^o$- ^3P† (22)
3006.05	A	20	15.65	19.75	2-1	
3018.82	A	12	15.64	19.73	1-0	
3004.39	A	10	15.64	19.75	1-1	
5634.84	A	18	15.77	17.96	1-1	3d' $^1P^o$-4p' ^1P (23)
4253.51	A	75	15.89	18.79	3-2	$4p^5P$-$5s^5S^o$ (24)
4241.38	A	60	15.88	18.79	2-2	
4234.09	A	50	15.88	18.79	1-2	
3860.80	A	150	15.89	19.09	3-4	$4p^5P$-$4d^5D^o$ (25)
3850.97	A	100	15.88	19.09	2-3	
3845.42	A	50	15.88	19.09	1-2	
3860.98	A	100	15.89	19.09	3-3	
3851.38	A	75	15.88	19.09	2-2	
3845.69	A	75	15.88	19.09	1-1	
3861.40	A	50	15.89	19.09	3-2	
3851.69	A	30	15.88	19.09	2-1	
3845.84	A	30	15.88	19.09	1-0	
6094.65	A	100	15.93	17.96	2-1	4s' $^1D^o$-4p' ^1P (26)
5790.50	A	25	15.93	18.06	2-1	4s' $^1D^o$-4p' ^3D† (27)
5392.12	A	100	15.93	18.22	2-3	4s' $^1D^o$-4p' ^1F (28)
4132.48	A	200	15.93	18.92	2-2	4s' $^1D^o$-4p' ^1D (29)
3276.81	A	40	15.93	19.70	2-2	4s' $^1D^o$-4p" ^1D (30)
3096.72	A	25	15.93	19.92	2-1	4s' $^1D^o$-4p" ^1P (31)
5285.48	A	30	16.27	18.60	2-2	$4p^3P$-3d' $^3P^o$ † (32)
5173.15	A	25	16.27	18.65	2-3	$4p^3P$-3d' $^3D^o$ †
5189.70	A	25	16.27	18.64	1-2	(33)
5162.34	A	10	16.27	18.66	0-1	
5193.03	A	10	16.27	18.64	2-2	
4585.03	A	15	16.27	18.96	2-1	$4p^3P$-3d' $^3S^o$† (34)
*4572.13	A	100	16.27	18.97	2-1	$4p^3P$-$5s^3S^o$
4569.42	A	50	16.27	18.97	1-1	(35)
*4572.13	A	100	16.27	18.97	0-1	
3949.96	A	10	16.27	19.39	2-2	$4p^3P$-$3p^5 4s^3P^o$† (36)
3329.12	A	150	16.27	19.97	2-3	$4p^3P$-$4d^3D^o$
*3315.44	A	100	16.27	19.99	1-2	(37)
3307.90	A	50	16.27	20.00	0-1	
3316.86	A	50	16.27	19.99	2-2	
3308.45	A	40	16.27	20.00	1-1	
6661.68	A	75	16.32	18.17	5-4	3d' $^3G^o$-4p' ^3F (38)
6686.04	A	45	16.32	18.16	4-3	
6713.43	A	40	16.32	18.15	3-2	
6653.75	A	25	16.32	18.17	4-4	
6681.03	A	15	16.32	18.16	3-3	
4924.83	A	10	17.02	19.53	2-1	4s" $^3P^o$-4p" ^3S† (39)
4907.17	A	15	17.01	19.53	1-1	
4781.32	A	75	17.02	19.60	2-3	4s" $^3P^o$-4p" ^3D (40)
4768.68	A	150	17.01	19.60	1-2	
4771.09	A	40	17.01	19.59	0-1	
4785.44	A	50	17.02	19.60	2-2	
4778.93	A	45	17.01	19.59	1-1	
4490.00	A	50	17.02	19.77	2-2	4s" $^3P^o$- ^3P (41)
4504.27	A	20	17.01	19.75	1-1	
4519.19	A	18	17.02	19.75	2-1	
4536.78	A	20	17.01	19.73	1-0	
*4475.28	A	20	17.01	19.77	1-2	
*4497.30	A	18	17.01	19.75	0-1	
*4259.52	A	35	17.02	19.92	2-1	4s" $^3P^o$-4p" ^1P (42)
4208.03	A	30	17.02	19.95	2-2	4s" $^3P^o$-4p" ^3P (43)
4191.59	A	15	17.01	19.96	1-1	
4204.54	A	18	17.02	19.96	2-1	
4188.82	A	15	17.01	19.96	1-0	
4195.11	A	18	17.01	19.95	1-2	
4185.61	A	20	17.01	19.96	0-1	
6831.62	A	30	17.11	18.92	1-2	4s" $^1P^o$-4p' ^1D (44)
4771.66	A	20	17.11	19.70	1-2	4s" $^1P^o$-4p" ^1D (45)
4399.14	A	15	17.11	19.92	1-1	4s" $^1P^o$-4p" ^1P (46)
4943.24	A	15	17.20	19.70	1-2	3d" $^1P^o$-4p" ^1D (47)
4544.48	A	10	17.20	19.92	1-1	3d" $^1P^o$-4p" ^1P (48)
3843.26	A	100	17.20	20.41	1-0	3d" $^1P^o$-4p" ^1S (49)
*5175.85	A	20	17.31	19.70	2-2	3d" $^1D^o$-4p" ^1D (50)
4740.40	A	150	17.31	19.92	2-1	3d" $^1D^o$-4p" ^1P (51)
4372.91	A	80	17.45	20.27	3-2	3d" $^3D^o$-x' (52)
4309.06	A	50	17.41	20.27	2-2	
*4259.52	A	35	17.37	20.27	1-2	
3037.98	A	35	17.45	21.51	3-2	3d" $^3D^o$-x" (53)
3006.98	A	20	17.41	21.51	2-2	
2982.78	A	18	17.37	21.51	1-2	
6759.42	A	35	17.78	19.60	4-3	3d" $^3F^o$-4p" ^3D† (54)
6850.21	A	40	17.80	19.60	3-2	
6952.13	A	25	17.82	19.59	2-1	
6841.86	A	10	17.80	19.60	3-3	
3883.80	A	12	17.96	21.14	1-2	4p' ^1P-5s' $^1P^o$ (55)
3688.44	A	15	17.96	21.30	1-2	4p' ^1P-4d' $^3F^o$ (56)
3022.93	A	30	17.96	22.04	1-2	4p' ^1P-4d' $^1D^o$ (57)
6399.41	A	10	18.03	19.95	2-2	3d" $^3P^o$-4p" ^3P† (58)
6522.38	A	10	18.08	19.97	3-3	4p' ^3D-4d $^3D^o$ † (59)
4147.09	A	30	18.08	21.06	3-3	4p' ^3D-5s' $^3D^o$† (60)
4130.86	A	25	18.06	21.05	2-2	
4133.66	A	20	18.06	21.05	1-1	
4124.00	A	12	18.06	21.06	2-3	
4079.88	A	15	18.08	21.11	3-3	4p' ^3D-5d $^3D^o$† (61)
4052.22	A	12	18.06	21.11	2-2	
3805.24	A	75	18.08	21.32	3-4	4p' ^3D-4d' $^3F^o$ (62)
3798.80	A	50	18.06	21.31	2-3	
3809.51	A	40	18.06	21.30	1-2	
3818.40	A	30	18.08	21.31	3-3	
3810.10	A	30	18.06	21.30	2-2	
3733.73	A	10	18.08	21.39	3-4	4p' ^3D-4d' $^3G^o$ (63)
3717.94	A	15	18.06	21.38	2-3	
3522.14	A	40	18.08	21.59	3-3	4p' ^3D-4d' $^3D^o$ (64)
3509.39	A	40	18.06	21.58	2-2	
3513.22	A	35	18.06	21.58	1-1	
3526.13	A	30	18.08	21.58	3-2	
3513.69	A	12	18.06	21.58	2-1	
3505.44	A	12	18.06	21.59	2-3	
3508.94	A	12	18.06	21.58	1-2	
3189.04	A	20	18.08	21.95	3-2	4p' ^3D-4d' $^3P^o$† (65)
4276.51	A	30	18.17	21.06	4-3	4p' ^3F-5s' $^3D^o$† (66)
4270.61	A	25	18.16	21.05	3-2	
4261.22	A	20	18.15	21.05	2-1	
4205.07	A	10	18.17	21.11	4-3	4p' ^3F-5d $^3D^o$ † (67)
3913.92	A	30	18.17	21.32	4-4	4p' ^3F-4d' $^3F^o$† (68)
3916.70	A	30	18.16	21.31	3-3	
3917.57	A	18	18.15	21.30	2-2	
Cl II continued						
3833.40	A	200	18.17	21.39	4-5	4p' ^3F-4d' $^3G^o$ (69)
3827.62	A	150	18.16	21.39	3-4	
3820.25	A	100	18.15	21.38	2-3	
3838.37	A	30	18.17	21.39	4-4	
3830.80	A	15	18.16	21.38	3-3	
3615.09	A	10	18.17	21.59	4-3	4p' ^3F-4d' $^3D^o$† (70)
*4235.49	A	25	18.22	21.14	3-2	4p' ^1F-5s' $^1D^o$ (71)
3781.23	A	30	18.22	21.49	3-3	4p' ^1F-4d' $^1F^o$ (72)
3231.75	A	12	18.22	22.04	3-2	4p' ^1F-4d' $^1D^o$ (73)
4811.57	A	12	18.49	21.06	2-3	4p' ^3P-5s' $^3D^o$† (74)
4857.04	A	10	18.51	21.05	1-2	
4721.43	A	25	18.49	21.11	2-3	4p' ^3P-5d $^3D^o$ † (75)
4748.67	A	20	18.51	21.11	1-2	
4738.41	A	10	18.51	21.12	1-1	
3990.19	A	20	18.49	21.59	2-3	4p' ^3P-4d' $^3D^o$ † (76)
4020.06	A	15	18.51	21.58	1-2	
4036.53	A	10	18.52	21.58	0-1	
3618.88	A	15	18.49	21.90	2-1	4p' ^3P-4d' $^3G^o$ (77)
3639.19	A	18	18.51	21.90	1-1	
3648.07	A	10	18.52	21.90	0-1	
3568.04	A	20	18.49	21.95	2-2	4p' ^3P-4d' $^3P^o$† (78)
3576.00	A	15	18.49	21.94	2-1	
3603.72	A	10	18.51	21.94	1-0	
3587.78	A	12	18.51	21.95	1-2	
3604.51	A	15	18.52	21.94	0-1	
7578.07	A	10	18.64	20.27	2-2	3d' $^3D^o$-x' † (79)
5568.81	A	15	18.92	21.14	2-2	4p' ^1D-5s' $^1D^o$ (80)
*5175.85	A	20	18.92	21.30	2-2	4p' ^1D-4d' $^3F^o$ (81)
3954.21	A	20	18.92	22.04	2-2	4p' ^1D-4d' $^1D^o$ (82)
4224.92	A	15	19.60	22.52	3-2	4p" ^3D-5s" $^3P^o$ †
*4235.49	A	25	19.60	22.51	2-1	(83)
3868.62	A	40	19.60	22.79	3-4	4p" ^3D-4d" $^3F^o$
3861.95	A	20	19.60	22.80	2-3	(84)
3854.75	A	15	19.59	22.80	1-2	
3864.60	A	15	19.60	22.80	3-3	
4482.03	A	10	19.77	22.52	2-2	3P-5s" $^3P^o$ †
*4497.30	A	18	19.77	22.51	2-1	(85)
*4475.28	A	20	19.75	22.51	1-0	

Strongest Unclassified Lines of Cl II

7565.53	A	18	3610.07	A	12
5356.14	A	10	3479.82	A	30
4584.28	A	20	3203.05	A	20
4157.82	A	25	3173.66	A	20
3981.94	A	15	3170.23	A	15
3793.75	A	25	3160.52	A	10

Cl III	I P 39.7		Anal B	List C	Nov 1944	
3602.10	B	9	21.56	24.98	$2\frac{1}{2}$-$3\frac{1}{2}$	$4s^4P$-$4p^4D^o$ † (1)
3612.85	B	8	21.49	24.91	$1\frac{1}{2}$-$2\frac{1}{2}$	
3622.69	B	7	21.45	24.85	$\frac{1}{2}$-$1\frac{1}{2}$	
3682.05	B	7	21.56	24.91	$2\frac{1}{2}$-$2\frac{1}{2}$	
3670.28	B	7	21.49	24.85	$1\frac{1}{2}$-$1\frac{1}{2}$	
3656.95	B	7	21.45	24.82	$\frac{1}{2}$- $\frac{1}{2}$	
3705.45	B	6	21.49	24.82	$1\frac{1}{2}$- $\frac{1}{2}$	
*3340.42	B	9	21.56	25.25	$2\frac{1}{2}$-$3\frac{1}{2}$	$4s^4P$-$4p^4P^o$ † (3)
3329.06	B	8	21.49	25.20	$1\frac{1}{2}$-$1\frac{1}{2}$	
3387.60	B	6	21.56	25.20	$2\frac{1}{2}$-$1\frac{1}{2}$	
*3340.42	B	9	21.49	25.19	$1\frac{1}{2}$- $\frac{1}{2}$	
3283.41	B	6	21.49	25.25	$1\frac{1}{2}$-$2\frac{1}{2}$	
3289.80	B	7	21.45	25.20	$\frac{1}{2}$-$1\frac{1}{2}$	
3191.45	B	9	21.56	25.42	$2\frac{1}{2}$-$1\frac{1}{2}$	$4s^4P$-$4p^4S^o$ (3)
3139.34	B	8	21.49	25.42	$1\frac{1}{2}$-$1\frac{1}{2}$	
3104.46	B	6	21.45	25.42	$\frac{1}{2}$-$1\frac{1}{2}$	
3925.87	A	5	22.11	25.25	$1\frac{1}{2}$-$2\frac{1}{2}$	$4s^2P$-$4p^4P^o$ † (4)
3720.45	A	8	22.11	25.42	$1\frac{1}{2}$-$2\frac{1}{2}$	$4s^2P$-$4p^2D^o$ † (5)
3748.81	A	8	22.02	25.31	$\frac{1}{2}$-$1\frac{1}{2}$	
3320.57	A	7	22.11	27.42	$1\frac{1}{2}$-$1\frac{1}{2}$	$4s^2P$-$4p^2P^o$ (6)
3259.32	A	6	22.02	27.39	$\frac{1}{2}$- $\frac{1}{2}$	
3336.16	A	5	22.11	27.39	$1\frac{1}{2}$- $\frac{1}{2}$	
3244.44	A	5	22.02	27.42	$\frac{1}{2}$-$1\frac{1}{2}$	
3991.50	A	7	22.16	25.25	$2\frac{1}{2}$-$2\frac{1}{2}$	$3d^4P$-$4p^4P^o$ † (7)
4059.07	A	6	22.16	25.20	$2\frac{1}{2}$-$1\frac{1}{2}$	
4104.23	A	5	22.18	25.19	$1\frac{1}{2}$- $\frac{1}{2}$	
4018.50	A	6	22.18	25.25	$1\frac{1}{2}$-$2\frac{1}{2}$	
4106.83	A	5	22.19	25.20	$\frac{1}{2}$-$1\frac{1}{2}$	
3779.35	A	5	22.16	25.42	$2\frac{1}{2}$-$2\frac{1}{2}$	$3d^4P$-$4p^2D^o$ † (8)

Cl III continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3824.47	A	4	22.60	27.42	2½-1½	$3d^3D-4p^2P^o$ †
3707.34	A	6	22.48	27.39	1½- ½	(9)
3530.03	A	9	23.26	26.75	2½-3½	4s' $^2D-4p'$ $^2F^o$†
3560.88	A	8	23.26	26.73	1½-2½	(10)
3393.45	A	8	23.26	26.89	2½-3½	4s' $^2D-4p'$ $^2D^o$†
3392.89	A	8	23.26	26.90	1½-1½	(11)
3386.22	A	5	23.26	26.90	2½-1½	
3683.39	A	5	24.07	27.42	2½-1½	3d' $^2D-4p'$ $^2P^o$† (12)
4608.21	A	5	24.22	26.89	3½-2½	3d' $^2F-4p'$ $^2D^o$† (13)

Cl IV See introduction

A I I P 15.69 Anal A List D June 1944

9122.9660	A	500	11.50	12.85	2-1	4s 1°-4p 1	
8115.3115	A	4000	11.50	13.02	2-3	(1) -4p 2	
8014.7856	A	800	11.50	13.04	2-2	-4p 3	
7723.7597	A	300	11.50	13.10	2-1	-4p 4	
7635.1053	A	500	11.50	13.11	2-2	-4p 5	
7147.0406	A	(8)	11.50	13.33	2-1	-4p 7	
7067.2170	A	(20)	11.50	13.24	2-2	-4p 8	
6965.4302	A	(20)	11.50	13.27	2-1	-4p 9	
4251.1852	B	(60)	11.50	14.40	2-1	4s 1°-5p 1	
4200.6751	B	(100)	11.50	14.44	2-3	(2) -5p 2	
4190.7127	B	(50)	11.50	14.44	2-2	-5p 3	
4164.1800	B	(80)	11.50	14.46	2-1	-5p 4	
4158.5906	B	(100)	11.50	14.47	2-2	-5p 5	
3947.5043	B	(40)	11.50	14.62	2-2	-5p 8	
3948.9788	B	(100)	11.50	14.62	2-1	-5p 9	
9657.7841	A	1500	11.57	12.85	1-1	4s 2°-4p 1	
8424.647	A	2500	11.57	13.04	1-2	(3) -4p 3	
8103.6922	A	2000	11.57	13.10	1-1	-4p 4	
8006.1556	A	600	11.57	13.11	1-2	-4p 5	
4300.1011	B	(100)	11.57	14.44	1-2	4s 2°-5p 3	
4272.1690	B	(100)	11.57	14.46	1-1	(4) -5p 4	
4266.2867	B	(100)	11.57	14.47	1-2	-5p 5	
4198.3170	B	(100)	11.57	14.51	1-0	-5p 6	
4044.4182	B	(100)	11.57	14.62	1-2	-5p 8	
3806.5224	B	(50)	11.57	15.00	1-0	4s 2°-6p 6 (5)	
10470.051	A	500	11.67	12.85	0-1	4s 3°-4p 1	
8667.9430	A	400	11.67	13.10	0-1	(8) -4p 4	
7948.1754	A	400	11.67	13.23	0-1	-4p 7	
7724.2064	A	200	11.67	13.27	0-1	-4p 9	
4522.3238	B	(40)	11.67	14.40	0-1	4s 3°-5p 1	
4191.0296	B	(100)	11.67	14.62	0-1	(7) -5p 7	
4181.8838	B	(80)	11.67	14.62	0-1	-5p 9	
9784.5010	A	1000	11.78	13.04	1-2	4s 4°-4p 3	
9354.218	A	200	11.78	13.10	1-1	(8) -4p 4	
9224.498	A	1000	11.78	13.11	1-2	-4p 5	
8521.4407	A	2000	11.78	13.23	1-1	-4p 7	
8408.208	A	3000	11.78	13.24	1-2	-4p 8	
8264.5209	A	1500	11.78	13.27	1-1	-4p 9	
7503.8676	A	(15)	11.78	13.42	1-0	-4p 10	
4702.3164	B	(100)	11.78	14.40	1-1	4s 4°-5p 1	
4628.4410	B	(90)	11.78	14.44	1-2	(9) -5p 3	
4596.0970	B	(90)	11.78	14.46	1-1	-5p 4	
4510.7333	B	(80)	11.78	14.51	1-0	-5p 6	
4345.1682	B	(90)	11.78	14.62	1-1	-5p 7	
4333.5612	B	(90)	11.78	14.62	1-2	-5p 8	
4335.3380	B	(70)	11.78	14.62	1-1	-5p 9	
4259.3818	B	(100)	11.78	14.87	1-0	-5p 10	
10873.55	C	500	12.85	14.01	1-2	4p 1-5s 1° (10)	
6752.832	A	(20)	12.85	14.88	1-2	4p 1-4d 3° (11)	
5650.7034	A	(30)	12.85	15.04	1-0	4p 1-5d 1° (12)	
6032.124	A	(30)	13.02	15.07	3-4	4p 2-5d 4° (13)	
5495.8730	A	(20)	13.02	15.28	3-4	4p 2-8d 4° (14)	

For changes in Paschen notation see text § 37

A II I P 27.5 Anal B List A Oct 1944

4401.02	A	7	18.34	19.14	3½-2½	$3d^4D-4p^4P^o$
4371.36	A	8	16.35	19.18	2½-1½	(1)
4332.06	A	5	16.37	19.22	1½- ½	
4431.02	A	8	16.35	19.14	2½-2½	
4400.09	A	6	16.37	19.18	1½-1½	
4358.23	A	6	16.39	19.22	½- ½	
4460.56	A	6	16.37	19.14	1½-2½	
4420.90	A	7	18.39	19.18	½-1½	
4013.87	A	10	16.34	19.41	3½-3½	$3d^4D-4p^4D^o$
3968.36	A	10	16.35	19.46	2½-2½	(2)
3914.76	A	7	16.37	19.53	1½-1½	
3891.40	A	6	16.39	19.56	½- ½	
3944.37	A	8	16.34	19.46	3½-2½	
3891.97	A	7	16.35	19.53	2½-1½	
3875.26	A	7	16.37	19.56	1½- ½	
4038.82	A	7	16.35	19.41	2½-3½	
3992.06	A	7	16.37	19.46	1½-2½	
3931.24	A	6	16.39	19.53	½-1½	
3786.40	A	6	16.34	19.60	3½-2½	$3d^4D-4p^2D^o$
3714.74	A	3	16.35	19.68	2½-1½	(3)
3808.61	A	5	16.35	19.60	2½-2½	
3735.49	A	4	16.37	19.68	1½-1½	
3830.43	A	5	16.37	19.60	1½-2½	
3750.50	A	4	16.39	19.68	½-1½	
3601.51	A	4	16.35	19.78	2½-1½	$3d^4D-4p^2P^o$
3693.33	A	0n	16.37	19.72	1½- ½	(4)
3631.06	A	0	16.37	19.78	1½-1½	
3706.94	A	4	16.39	19.72	½- ½	
3635.13	A	00n	16.39	19.78	½-1½	
3499.49	A	5	16.35	19.88	2½-1½	$3d^4D-4p^4S^o$
3517.90	A	3	16.37	19.88	1½-1½	(5)
3531.22	A	2	16.39	19.88	½-1½	
4806.07	A	20	16.57	19.14	2½-2½	$4s^4P-4p^4P^o$
4933.24	A	6	16.68	19.18	1½-1½	(6)
4972.16	A	5	16.74	19.22	½- ½	
4735.93	A	15	16.57	19.18	2½-1½	
4847.90	A	8	16.68	19.22	1½- ½	
5009.35	A	8	16.68	19.14	1½-2½	
5062.07	A	8	16.74	19.18	½-1½	
4348.11	A	20n	16.57	19.41	2½-3½	$4s^4P-4p^4D^o$
4436.01	A	15	16.68	19.46	1½-2½	(7)
4430.18	A	9	18.74	19.53	½-1½	
4266.53	A	10	16.57	19.46	2½-2½	
4331.25	A	10	16.68	19.53	1½-1½	
4379.74	A	8	16.74	19.56	½- ½	
4178.39	A	5	16.57	19.53	2½-1½	
4282.90	A	7	16.68	19.56	1½- ½	
4082.40	A	6	16.57	19.60	2½-2½	$4s^4P-4p^2D^o$
4112.83	A	5	16.68	19.68	1½-1½	(8)
3974.76	A	6	16.57	19.68	2½-1½	
4238.18	A	7	16.68	19.60	1½-2½	
4201.99	A	5	16.74	19.68	½-1½	
3845.42	A	5	16.57	19.78	2½-1½	$4s^4P-4p^2P^o$
3974.48	A	5	16.68	19.78	1½-1½	(9)
4147.43	A	1n	16.74	19.72	½- ½	
4057.72	A	0n	16.74	19.78	½-1½	
3729.29	A	10	16.57	19.88	2½-1½	$4s^4P-4p^4S^o$
3850.57	A	15	16.68	19.88	1½-1½	(10)
3928.62	A	9	16.74	19.88	½-1½	
3923.54	A	1n	16.74	19.89	½- ½	$4s^4P-4p^2S^o$ (11)
5950.91	A	0	17.07	19.14	1½-2½	$4s^2P-4p^4P^o$
5843.80	A	00n	17.07	19.18	1½-1½	(12)
6077.43	A	00	17.19	19.22	½- ½	
5724.37	A	0n	17.07	19.22	1½- ½	
5145.36	A	8	17.07	19.46	1½-2½	$4s^2P-4p^4D^o$
5288.92	A	5	17.19	19.53	½-1½	(13)
5017.63	A	2	17.07	19.53	1½-1½	
4879.90	A	12	17.07	19.60	1½-2½	$4s^2P-4p^2D^o$
4965.12	A	7	17.19	19.68	½-1½	(14)
4726.91	A	10	17.07	19.68	1½-1½	
4545.08	A	10	17.07	19.78	1½-1½	$4s^2P-4p^2P^o$
4889.06	B	5	17.19	19.72	½- ½	(15)
4657.94	A	9	17.07	19.72	1½- ½	
4764.89	A	10	17.19	19.78	½-1½	
4383.79	A	4	17.07	19.88	1½-1½	$4s^2P-4p^4S^o$
4587.90	B	2	17.19	19.88	½-1½	(16)
4375.96	A	5	17.07	19.89	1½- ½	$4s^2P-4p^2S^o$
4579.39	A	8	17.19	19.89	½- ½	(17)
3108.82	A	000n	17.07	21.04	1½-2½	4s' $^2P-4p'$ $^2F^o$ (18)
2979.05	A	8	17.19	21.33	½- ½	$4s^2P-4p'$ $^2P^o$†
3033.52	A	8	17.19	21.28	½-1½	(19)

A II continued

6643.79	A	10	17.55	19.41	4½-3½	$3d^4F-4p^4D^o$
6684.36	A	8	17.62	19.46	3½-2½	(20)
6638.24	A	8	17.67	19.53	2½-1½	
6639.72	A	7	17.70	19.56	1½- ½	
6886.57	B	6	17.62	19.41	3½-3½	
6863.52	B	6	17.67	19.46	2½-2½	
6756.61	A	5	17.70	19.53	1½-1½	
7077.03	A	1	17.67	19.41	2½-3½	
6990.16	A	2	17.70	19.46	1½-2½	
6243.13	A	6	17.62	19.60	3½-2½	$3d^4F-4p^2D^o$
6138.67	A	3	17.67	19.68	2½-1½	(21)
6399.23	A	4	17.67	19.60	2½-2½	
6239.73	A	2	17.70	19.68	1½-1½	
6509.16	A	00	17.70	19.60	1½-2½	
6120.12	A	00	17.70	19.72	1½- ½	$3d^4F-4p^2P^o$ (22)
3594.41	A	00n	17.62	21.05	3½-3½	$3d^4F-4p'$ $^2F^o$ (23)
6808.55	A	3	17.86	19.68	½-1½	$3d^2P-4p^2D^o$
7284.27	A	0	17.98	19.68	1½-1½	(24)
6861.30	A	4	17.98	19.78	1½-1½	$3d^2P-4p^2P^o$
6666.36	A	5	17.86	19.72	½- ½	(25)
6437.63	A	2	17.86	19.78	½-1½	
6500.25	A	3	17.98	19.88	1½-1½	$3d^2P-4p^4S^o$ (26)
6483.10	A	6	17.98	19.89	1½- ½	$3d^2P-4p^2S^o$
6103.56	A	4	17.86	19.89	½- ½	(27)
4042.20	A	1	17.98	21.04	1½-2½	$3d^2P-4p'$ $^2F^o$ (28)
3766.13	A	5	17.98	21.26	1½-1½	$3d^2P-4p'$ $^2P^o$
3556.91	A	5	17.86	21.33	½- ½	(29)
3682.56	A	4	17.98	21.33	1½- ½	
3634.83	A	4	17.86	21.26	½-1½	
3605.89	A	6	17.98	21.41	1½-2½	$3d^2P-4p'$ $^2D^o$
3490.89	A	4	17.86	21.40	½-1½	(30)
3611.84	A	4	17.98	21.40	1½-1½	
4609.60	A	15	18.37	21.05	2½-3½	4s' $^2D-4p'$ $^2F^o$
4589.93	A	9	18.35	21.04	1½-2½	(31)
4637.25	A	6	18.37	21.04	2½-2½	
4277.55	A	8	18.37	21.26	2½-1½	4s' $^2D-4p'$ $^2P^o$
4131.73	A	8	18.35	21.33	1½- ½	(32)
4237.23	A	7	18.35	21.26	1½-1½	
4073.01	A	9	18.37	21.41	2½-2½	4s' $^2D-4p'$ $^2D^o$
4043.91	A	8	18.35	21.40	1½-1½	(33)
4079.60	A	5	18.37	21.40	2½-1½	
4035.47	A	6	18.35	21.41	1½-2½	
4936.13	A	00n	18.54	21.04	2½-2½	$3d^2F-4p'$ $^2F^o$
4904.75	A	8	18.54	21.05	2½-3½	(34)
4530.57	A	4	18.54	21.26	2½-1½	$3d^2F-4p'$ $^2P^o$ (35)
4182.98	A	0	18.46	21.41	3½-2½	$3d^2F-4p'$ $^2D^o$
4309.11	A	2	18.54	21.40	2½-1½	(36)
4300.66	A	6	18.54	21.41	2½-2½	
5141.84	A	6	18.65	21.05	2½-3½	$3d^2D-4p'$ $^2F^o$
5017.16	A	6	18.58	21.04	1½-2½	(37)
5176.28	A	3	18.65	21.04	2½-2½	
4732.08	B	5	18.65	21.26	2½-1½	$3d^2D-4p'$ $^2P^o$
4474.77	A	6	18.58	21.33	1½- ½	(38)
4598.77	A	5	18.58	21.26	1½-1½	
4481.83	A	8	18.65	21.41	2½-2½	$3d^2D-4p'$ $^2D^o$
4370.76	A	6	18.58	21.40	1½-1½	(39)
4490.99	A	5	18.65	21.40	2½-1½	
4362.07	A	5	18.58	21.41	1½-2½	
5245.49	A	0	19.18	21.53	1½-1½	$4p^4P^o-3d'$ ^2P (40)
4072.40	A	7	19.14	22.17	2½-1½	$4p^4P^o-s^2P$
4134.09	A	0	19.18	22.17	1½-1½	(41)
4127.09	B	00n	19.22	22.21	½- ½	
3765.37	A	6	19.14	22.42	2½-2½	$4p^4P^o-5s^4P$
3730.43	A	5	19.18	22.50	1½-1½	(42)
3669.62	A	5	19.22	22.59	½- ½	
3678.27	A	5	19.14	22.50	2½-1½	
3622.15	A	6	19.18	22.59	1½- ½	
3809.49	A	7	19.18	22.42	1½-2½	
3770.54	A	6	19.22	22.50	½-1½	
3564.34 §	B	4	19.14	22.60	2½-1½	$4p^4P^o-5s^2P$
3603.91	B	3	19.18	22.60	1½-1½	(43)
3650.90	A	4	19.22	22.60	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
A II continued						
3491.54	A	8	19.14	22.67	2½-3½	4p⁴P°-4d⁴D (44)
3514.39	A	9	19.18	22.69	1½-2½	
3535.33	A	6	19.22	22.71	½-1½	
3476.74	A	6	19.14	22.69	2½-2½	
3491.24	A	6	19.18	22.71	1½-1½	
3509.78	A	6	19.22	22.74	½- ½	
3454.10	A	5	19.14	22.71	2½-1½	
*3466.34	A	5	19.18	22.74	1½- ½	
3478.24	A	4	19.18	22.73	1½- ½	4p⁴P°-3d' ²S (45)
3521.98	A	4	19.22	22.73	½- ½	
3269.05	A	2	19.14	22.92	2½-3½	4p⁴P°-4d⁴F (46)
3254.03	A	1	19.18	22.97	1½-2½?	
3263.60	A	5	19.22	23.00	½-1½	
3221.64	A	3	19.14	22.97	2½-2½	
3226.00	A	3	19.18	23.00	1½-1½	
3194.25	A	5	19.14	23.00	2½-1½	
3139.02	A	7	19.14	23.07	2½-2½	4p⁴P°-4d⁴P (47)
3213.54	A	5	19.18	23.03	1½-1½	
3281.72	A	6	19.22	22.98	½- ½	
3181.05	A	7	19.14	23.02	2½-1½	
3243.70	A	7	19.18	22.98	1½- ½	
3169.68	A	8	19.18	23.07	1½-2½	
3249.82	A	7	19.22	23.02	½-1½	
3186.19	A	3	19.18	23.05	1½-2½	4p⁴P°-4d²D (48)
3146.47	A	2	19.14	23.06	2½-3½	4p⁴P°-4d²F (49)
*6818.39	A	4	(19.46	21.27	2½-2½	4p⁴D°-3d' ²D
			19.53	21.34	1½-1½	(50)
4561.03	A	4	19.46	22.17	2½-1½	4p⁴D°-a²P (51)
4593.44	A	2	19.53	22.21	1½- ½	
4666.28	B	2n	19.53	22.17	1½-1½	
4649.06	B	0n	19.56	22.21	½- ½	
*4103.91	A	10	19.41	22.42	3½-2½	4p⁴D°-5s⁴P (52)
*4072.40	A	7	19.46	22.50	2½-1½	
4033.83	A	6	19.53	22.59	1½- ½	
4179.31	A	5	19.46	22.42	2½-2½	
4156.11	A	5	19.53	22.50	1½-1½	
4076.64	A	5	19.56	22.59	½- ½	
4267.47	B	0	19.53	22.42	1½-2½	
4201.58	A	2	19.56	22.50	½-1½	
3933.19	A	0	19.46	22.60	2½-1½	4p⁴D°-5s²P (53)
4011.23	A	3	19.53	22.60	1½-1½	
*3922.54	A	1n	19.56	22.70	½- ½	
4053.56	A	0	19.56	22.60	½-1½	
3780.84	A	8	19.41	22.67	3½-3½	4p⁴D°-4d⁴D (54)
3826.83	A	6	19.46	22.69	2½-2½	
3872.15	A	5	19.53	22.71	1½-1½	
3880.34	A	4	19.56	22.74	½- ½	
3763.52	A	5	19.41	22.69	3½-2½	
3799.39	A	6	19.46	22.71	2½-1½	
3841.54	A	3	19.53	22.74	1½- ½	
3844.75	A	4	19.46	22.67	2½-3½	
3900.63	A	5	19.53	22.69	1½-2½	
3911.58	A	5	19.56	22.71	½-1½	
3856.16	A	1	19.53	22.73	1½- ½	4p⁴D°-3d' ²S (55)
3895.26	A	2	19.56	22.73	½- ½	
3588.44	A	10	19.41	22.85	3½-4½	4p⁴D°-4d⁴F (56)
3576.62	A	10	19.46	22.92	2½-3½	
3582.35	A	8	19.53	22.97	1½-2½	
3581.62	A	6	19.56	23.00	½-1½	
3521.27	A	5	19.41	22.92	3½-3½	
3520.00	A	6	19.46	22.97	2½-2½	
3548.51	A	7	19.53	23.00	1½-1½	
*3466.34	A	5	19.41	22.97	3½-2½	
3487.33	A	3	19.46	23.00	2½-1½	
3370.97	A	5	19.41	23.07	3½-2½	4p⁴D°-4d⁴P (57)
3471.59	A	2	19.46	23.02	2½-1½	
3569.94	A	1	19.53	22.98	1½- ½	
3421.64	A	5	19.46	23.07	2½-2½	
3532.19	A	00n	19.53	23.02	1½-1½?	
3603.46	A	3	19.56	22.98	½- ½	
3480.52	A	5	19.53	23.07	1½-2½	
3565.02	A	5	19.56	23.02	½-1½	
3438.14	A	000n	19.46	23.05	2½-1½	4p⁴P°-4d²D (58)
3379.48	A	2n	19.41	23.06	3½-3½	4p⁴P°-4d²F (59)
3341.77	A	2	19.46	23.16	2½-2½	
3430.44	A	4	19.46	23.06	2½-3½	
*3397.89 §	A	4	19.53	23.16	1½-2½	
7348.11	A	2	19.60	21.27	2½-2½	4p³D°-3d' ²D (60)
7440.54	A	0	19.68	21.34	1½-1½	
7090.55	A	000	19.60	21.34	2½-1½	
6376.00	A	0	19.60	21.53	2½-1½	4p²D°-3d' ²p (61)
4792.12	A	5	19.60	22.17	2½-1½	4p²D°-a²P (62)
4867.59	A	3	19.68	22.21	1½- ½	
4949.45	A	2	19.68	22.17	1½-1½	
A II continued						
4372.50	A	0	19.60	22.42	2½-2½	4p³D°-5s⁴P (63)
4379.25	A	1	19.68	22.50	1½-1½	
4255.62	A	3	19.60	22.50	2½-1½	
*4243.71	A	2n	19.68	22.59	1½- ½	
4502.95	A	5	19.68	22.42	1½-2½?	
*4103.91	A	10	19.60	22.60	2½-1½	4p³D°-5s²P (64)
4076.96	A	4	19.68	22.70	1½- ½	
4218.69	A	5	19.68	22.60	1½-1½	
4007.66	A	1	19.60	22.67	2½-3½	4p³D°-4d⁴D (65)
4096.47	A	000	19.68	22.69	1½-2½	
3988.18	A	4	19.60	22.69	2½-2½	
4065.14	B	3	19.68	22.71	1½-1½	
3958.39	A	5	19.60	22.71	2½-1½	
4031.41	B	2	19.68	22.74	1½- ½?	
4047.51	A	3	19.68	22.73	1½- ½	4p³D°-3d' ²S (66)
3717.17	A	5	19.60	22.92	2½-3½	4p³D°-4d⁴F (67)
3746.92	A	4	19.68	22.97	1½-2½	
3656.05	A	5	19.60	22.97	2½-2½	
3709.90	A	4	19.68	23.00	1½-1½	
3620.82	A	0	19.60	23.00	2½-1½	
3550.03	A	4	19.60	23.07	2½-2½	4p³D°-4d⁴P (68)
3692.17	A	00n	19.68	23.02	1½-1½	
*3603.91	B	3	19.60	23.02	2½-1½?	
3733.36	A	0n	19.68	22.98	1½- ½	
3635.67	A	2	19.68	23.07	1½-2½	
3570.77	A	00n	19.60	23.05	2½-2½	4p³D°-4d²D (69)
3559.53	A	6	19.60	23.06	2½-3½	4p³D°-4d²F (70)
3545.58	A	10	19.68	23.16	1½-2½	
3464.14	A	6	19.60	23.16	2½-2½	
3137.66	A	4	19.60	23.53	2½-1½	4p³D°-4d²P (71)
3273.36	A	4	19.68	23.45	1½- ½	
3204.34	A	5	19.68	23.53	1½-1½	
3000.45	A	5	19.68	23.79	1½-1½	4p²D°-3d" ²D†
3014.49	A	5	19.68	23.77	1½-2½	(72)
7617.86	C	1	19.72	21.34	½-1½	4p²P°-3d' ²D (73)
7055.01	A	2	19.78	21.53	1½-1½	4p²P°-3d' ²P
6799.32	A	2	19.72	21.53	½-1½	(74)
5165.82	A	5	19.78	22.17	1½-1½	4p³P°-a²P
4942.96	A	4	19.72	22.21	½- ½	(75)
4681.52	A	1	19.78	22.42	1½-2½	4p²P°-5s⁴P (76)
*4440.09	A	3	19.72	22.50	½-1½	
4547.78	A	5	19.78	22.50	1½-1½	
*4300.66	A	6	19.72	22.59	½- ½	
4401.74	A	1n	19.78	22.59	1½- ½	
4374.87	A	3	19.78	22.60	1½-1½	4p²P°-5s²P (77)
4139.70	A	4	19.72	22.70	½- ½	
4232.67	A	5	19.78	22.70	1½- ½	
4275.19	A	4	19.72	22.60	½-1½	
*4243.71	A	2n	19.78	22.69	1½-2½	4p²P°-4d⁴D (78)
4210.00	A	00n	19.78	22.71	1½-1½	
4173.77	D	1	19.78	22.74	1½- ½	
4099.47	A	3	19.72	22.73	½- ½	4p²P°-3d' ²S (79)
3869.61	A	0	19.78	22.97	1½-2½?	4p²P°-4d⁴F
*3753.53	A	4	19.72	23.00	½-1½	(80)
3751.06	A	0	19.78	23.07	1½-2½	4p²P°-4d⁴P (81)
3811.22	A	1	19.78	23.02	1½-1½	
3777.55	A	2	19.72	22.98	½- ½	
3855.18	A	0	19.78	22.98	1½- ½	
3655.29	A	6	19.78	23.16	1½-2½?	4p²P°-4d²F (82)
3293.66	A	7	19.78	23.53	1½-1½	4p²P°-4d²P
3307.24	A	6	19.72	23.45	½- ½	(83)
3366.59	A	4	19.78	23.45	1½- ½	
3236.82	A	4	19.72	23.53	½-1½	
3093.41	A	8	19.78	23.77	1½-2½	4p²P°-3d" ²D
3028.93	A	6	19.72	23.79	½-1½	(84)
4865.96	A	5	19.88	23.43	1½-2½	4p⁴S°-5s⁴P (85)
4721.62	B	4	19.88	23.50	1½-1½	
4564.43	A	5	19.88	23.59	1½- ½	
4535.51	A	4	19.88	23.60	1½-1½	4p⁴S°-5s²P (86)
4373.09	A	0n	19.88	23.70	1½- ½	
4394.65	A	2n	19.88	22.69	1½-2½	4p⁴S°-4d⁴D (87)
4358.53	A	1	19.88	22.71	1½-1½	
4319.69	A	00n	19.88	22.74	1½- ½	
4338.24	B	1	19.88	22.73	1½- ½	4p⁴S°-3d' ²S (88)
*3994.81	A	5	19.88	22.97	1½-2½	4p⁴S°-4d⁴F
3952.74	A	6	19.88	23.00	1½-1½	(89)
A II continued						
3868.53	A	8	19.88	23.07	1½-2½	4p⁴S°-4d⁴P (90)
3932.55	A	7	19.88	23.02	1½-1½	
3979.36	A	7	19.88	22.98	1½- ½	
3893.14	A	00n	19.88	23.05	1½-2½	4p⁴S°-4d²D (91)
3383.94	A	2	19.88	23.05	1½-1½?	4p⁴S°-4d²P (92)
5305.77	A	3	19.89	22.21	½- ½	4p²S°-a²P (93)
4730.69	A	2	19.89	22.50	½-1½	4p²S°-5s⁴P
4572.92	A	1	19.89	22.59	½- ½	(94)
4543.91	A	1	19.89	22.60	½-1½	4p²S°-5s²P (95)
3388.54	A	7	19.89	23.53	½-1½	4p²S°-4d²P
3465.80	A	3	19.89	23.45	½- ½	(96)
3161.38	A	4	19.89	23.79	½-1½	4p²S°-3d" ²D (97)
4385.08	B	4	20.65	23.47	½-1½	4s" ²S-5p²P°
4367.87	A	5	20.65	23.48	½- ½	(98)
4309.25	A	3	20.65	23.52	½-1½	4s" ²S-5p²D° (99)
4097.15	A	3	20.65	23.67	½- ½	4s" ²S-5p²S° (100)
4052.94	A	5	20.65	23.70	½-1½	4s" ²S-4p" ²P°
*3994.81	A	5	20.65	23.74	½- ½	(101)
6172.28	A	7	21.05	23.05	3½-2½	4p' ³P°-4d²D
6114.92	A	10	21.04	23.05	2½-1½	(102)
6123.38	A	3	21.04	23.05	2½-2½	
*6138.67	A	3	21.05	23.06	3½-3½	4p' ³P°-4d²F (103)
4538.73	A	1n	21.05	23.77	3½-2½	4p' ³P°-3d" ²D
4480.85	A	0n	21.04	23.79	2½-1½	(104)
3946.10	A	7	21.05	24.18	3½-2½	4p' ³P°-5s' ²D
3925.71	A	3	21.04	24.18	2½-1½	(105)
3561.04	A	6	21.05	24.52	3½-4½	4p' ³P°-4d' ²G
3545.84	A	9	21.04	24.52	2½-3½	(106)
3562.19	A	4	21.05	24.52	3½-3½	
3429.64	A	3	21.05	24.65	3½-2½	4p' ³P°-4d' ²D
3432.64	A	2	21.04	24.63	2½-1½	(107)
3414.46	A	3	21.04	24.65	2½-2½	
3373.87	A	2n	21.04	24.69	2½-1½	4p' ³P°-6s²P (108)
3376.46	A	7	21.05	24.71	3½-3½	4p' ³P°-4d' ²F
3350.94	A	6	21.04	24.73	2½-2½	(109)
3365.54	A	4	21.05	24.73	3½-2½	
3361.73	A	3	21.04	24.71	2½-3½	
5296.48	A	00n	21.12	23.45	2½-3½	3d' ²F-5p⁴D° (110)
4205.19	A	00n	21.12	24.06	2½-3½?	3d' ²F-4f²F° (111)
4914.32	A	2	21.26	23.77	1½-2½	4p' ³P°-3d" ²D
4877.08	A	0n	21.26	23.79	1½-1½	(112)
4227.02	A	4	21.26	24.18	1½-2½	4p' ³P°-5s' ²D
4337.10	A	6	21.33	24.18	½-1½	(113)
4226.65	A	2	21.26	24.18	1½-1½	
3713.03	A	2	21.26	24.58	1½-1½	4p' ³P°-6s⁴P (114)
3600.22	A	3	21.26	24.69	1½-1½	4p' ³P°-4d' ²P
3754.06	A	3	21.33	24.62	½- ½	(115)
3671.01	A	3	21.26	24.62	1½- ½	
3680.06	A	5	21.33	24.69	½-1½	
3639.85	A	7	21.26	24.65	1½-2½	4p' ³P°-4d' ²D
3660.44	A	6	21.26	24.63	1½-1½	(116)
3593.76	A	00n	21.26	24.69	1½-1½	4p' ³P°-6s³P
3673.26	A	4	21.33	24.69	½-1½	(117)
3104.38	A	5	21.26	25.24	1½-1½	4p' ³P°-5d²P
3153.80	A	4	21.33	25.25	½- ½	(118)
3094.98	A	3	21.26	25.25	1½- ½	
3163.61	A	1	21.33	25.24	½-1½	
3088.24	A	5	21.26	25.26	1½-2½	4p' ³P°-5d³D (119)
3026.75	A	4	21.26	25.34	1½- ½	4p' ³P°-4d' ³S
3082.99	A	4	21.33	25.34	½- ½	(120)
5625.74	A	0n	21.27	23.47	2½-1½	3d' ²D-5p²P° (121)
5090.55	A	2	21.27	23.70	2½-1½	3d' ²D-4p" ³P°
5125.84	A	0	21.34	23.74	1½- ½	(122)
4433.83	A	5	21.27	24.06	2½-3½	3d' ²D-4f²F°
4537.67	B	4	21.34	24.06	1½-2½	(123)
4438.12	A	1	21.27	24.06	2½-2½	

A II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4114.52	A	2	21.27	24.27	3½-3½	3d' ²D-4f³D°
•4301.99	A	5	21.34	24.27	1½-1½	(134)
4116.39	B	4	21.27	24.27	2½-1½	
4199.93	A	3	21.34	24.27	1½-2½	
5812.81	A	0	21.41	23.53	2½-1½	4p' ³D°-4d³P (135)
5216.84	A	3	21.41	23.77	2½-2½	4p' ³D°-3d" ²D
5163.80	A	1	21.40	23.79	1½-1½	(136)
5204.46	B	0	21.40	23.77	1½-2½	
4448.88	A	6	21.41	24.18	2½-2½	4p' ³D°-5s' ²D
4439.45	A	3	21.40	24.18	1½-1½	(137)
4448.47	A	1	21.41	24.18	2½-1½	
•4440.09	A	3	21.40	24.18	1½-2½	
•3830.43	A	5	21.40	24.62	1½- ½	4p' ³D°-4d' ²P
•3753.53	A	4	21.40	24.69	1½-1½	(138)
3803.19	A	6	21.41	24.65	2½-2½	4p' ³D°-4d' ²D
3819.04	A	4	21.40	24.63	1½-1½	(139)
3825.70	A	5	21.41	24.63	2½-1½	
3796.60	A	4	21.40	24.65	1½-2½	
3746.46	A	4	21.40	24.69	1½-1½	4p' ³D°-6s³P (130)
3737.89	A	6	21.41	24.71	2½-3½	4p' ³D°-4d' ²F
3718.31	A	6	21.40	24.72	1½-2½	(131)
3734.51	A	4	21.41	24.72	2½-2½	
3222.43	A	3	21.41	25.24	2½-1½	4p' ³D°-5d³P
3207.61	A	4	21.40	25.25	1½- ½	(132)
3217.70	A	3	21.40	25.24	1½-1½	
3205.03	A	4	21.41	25.26	2½-2½	4p' ³D°-5d³D (133)
5691.71	B	1	21.53	23.70	1½-1½	3d' ³R-4p" ³P°
5577.70	A	2	21.53	23.74	1½- ½	(134)
4888.29	A	0	21.53	24.06	1½-2½	3d' ³P-4f²F° (135)
4498.55	A	5	21.53	24.27	1½-2½	3d' ³R-4f²D° (136)
6985.74	A	000n	23.47	25.24	1½-1½	5p³P°-5d³P (137)

Strongest Unclassified Lines Attributed to A II

7689.36	A	3
7380.45	A	4
7233.58	A	4
6441.95	A	3
6324.45	B	3
5454.41	A	3
5407.44	A	4
5402.69	A	3
5397.60	A	3
4882.35	A	4
4703.36	A	4
4682.29	B	4
4611.25	A	3
4563.78	A	5
4336.51	A	3
4297.99	A	5
4229.89	A	4
4217.45	B	4
4203.43	A	5
4189.67	A	4
4168.98	B	3
4128.65	A	5
4080.67	A	4
3774.54	A	3
3637.89	A	3
3637.05	A	5
3543.16	A	5
3470.27	A	3
3379.58	A	5
3306.50	A	3
3293.95	A	4
3291.47	A	4
3259.71	A	4
3247.55	A	3
3216.75	A	4
3165.31	A	5
3161.45	A	3
3148.24	A	3
3136.55	A	4
3109.75	A	3
3103.63	A	3
3099.97	A	4
3085.05	A	4
3066.92	A	4
3060.94	B	5
3053.20	A	3
3046.10	A	4
3003.00	A	3
3000.14	A	4

A III I P 40.8 Anal C List D Nov 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3285.85	A	25	21.53	25.28	2-3	4s⁵S°-4p⁵P
3301.88	A	20	21.53	25.26	2-2	(1)
3311.25	A	15	21.53	25.25	2-1	
3480.55	A	20	24.28	27.83	3-3	4s' ³P°-4p' ³D†
3503.58	A	15	24.27	27.79	2-2	(2)
3499.67	A	12	24.27	27.80	1-1	
3336.13	A	25	24.28	27.98	3-4	4s' ³P°-4p' ³F†
3344.72	A	20	24.27	27.96	2-3	(3)
3358.49	A	15	24.27	27.94	1-2	
3024.05	B	12	25.58	29.66	2-3	4s" ³P°-4p" ³D†
3054.82	B	12	25.62	29.66	1-2	(4)
3078.15	B	10	25.64	29.65	0-1	
3064.77	B	10	25.62	29.65	1-1	
3795.37	B	20	26.41	29.66	2-3	3d" ³P°-4p" ³D†
3858.32	B	10	26.46	29.66	1-2	(5)
3391.85	B	15	26.41	30.05	2-2	3d" ³P°-4p" ³P† (6)

A IV I P 61 Anal B List A Nov 1944

3077.40	A	8	31.77	35.78	1½-2½	4s³P-4p⁴P°
3016.15	A	5	30.95	35.71	½-1½	(1)
3134.90	A	3	31.77	35.71	1½-1½	
3037.98	A	6	31.77	35.83	1½-1½	4s²P-4p²D° † (2)

K I I P 4.32 Anal A List C Nov 1944

7664.907//	A	10R	0.00	1.61	½-1½	4²S-4²P°
7698.979	A	10R	0.00	1.60	½- ½	(1)
4642.87	H	(3)Forb	0.00	2.66	½-2½	4²S-3²D
4641.77	H	(1)Forb	0.00	2.66	½-1½	(2)
4044.145	B	8R	0.00	3.05	½-1½	4²S-5²P°
4047.314	B	6R	0.00	3.05	½- ½	(3)
3446.38	G	8R	0.00	3.58	½-1½	4²S-6²P°
3447.41	G	6R	0.00	3.58	½- ½	(4)
13583.0	F	(90)	1.61	2.60	1½- ½	4²P°-5²S
13434.3	F	(100)	1.60	2.60	½- ½	(5)
11773.66	C	15r	1.61	2.66	1½-2½	4²P°-3²D
11689.76	C	10	1.60	2.66	½-1½	(6)
11769.41	D	3	1.61	2.66	1½-1½	
6964.69	E	(1)	1.61	3.38	1½-2½	4²P°-4²D
6936.27	E	(1)	1.60	3.38	½-1½	(7)
6964.18	E	(-)	1.61	3.38	1½-1½	
9950.5	D	30N	2.60	3.84	½-1½	5²S-7²P°
9955.2	D	10N	2.60	3.84	½- ½	(8)
11022.3	D	10NW	2.66	3.78	—	3²D-5²F° (9)
9595.60	E	50N1W	2.66	3.94	2½-	3²D-6²F°
9597.76	E	30N1W	2.66	3.94	1½-	(10)

K II I P 31.7 Anal A List D June 1944

4829.33	A	30	20.06	22.62	2-1	4s 1°-4p 1
4186.24	A	30	20.06	23.01	2-3	(1) -4p 2
4134.72	A	30	20.06	23.05	2-3	-4p 3
3995.10	A	10	20.06	23.15	2-1	-4p 4
3897.92	A	15	20.06	23.23	2-2	-4p 5
3739.13	A	9	20.06	23.36	2-1	-4p 7
3681.54	A	15	20.06	23.41	2-2	-4p 8
3618.49	A	15	20.06	23.47	2-1	-4p 9
5005.60	A	15	20.15	22.62	1-1	4s 2°-4p 1
4263.40	A	30	20.15	23.05	1-2	(2) -4p 3
4114.99	A	30	20.15	23.15	1-1	-4p 4
4012.10	A	10	20.15	23.33	1-2	-4p 5
3783.19	A	15	20.15	23.41	1-2	-4p 8
3767.36	A	15	20.15	23.43	1-0	-4p 6
3716.60	A	9	20.15	23.47	1-1	-4p 9
5056.27	A	8	20.18	22.62	0-1	3d 1°-4p 1
3873.74	A	10	20.18	23.36	0-1	(3) -4p 7
3744.42	A	9	20.18	23.47	0-1	-4p 9
4505.33	A	30	20.31	23.05	1-2	3d 2°-4p 3
4340.03	A	30	20.31	23.15	1-1	(4) -4p 4
4225.87	A	30	20.31	23.33	1-2	-4p 5
3973.58	A	15	20.31	23.41	1-2	-4p 8

K II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4659.38	A	15	20.36	23.01	2-3	3d 3°-4p 2
4423.73	A	10	20.36	23.15	2-1	(5) -4p 4
4305.00	A	30	20.36	23.23	2-2	-4p 5
3966.72	A	15	20.36	23.47	2-1	-4p 9
5536.01	A	(3)	20.39	22.62	0-1	4s 3°-4p 1
4466.65	A	20	20.39	23.15	0-1	(6) -4p 4
4149.19	A	30	20.39	23.36	0-1	-4p 7
4001.34	A	15	20.39	23.47	0-1	-4p 9
5969.64	A	(2)	20.55	22.62	1-1	4s 4°-4p 1
4943.24	A	5	20.55	23.05	1-2	(7) -4p 3
4608.45	A	30	20.55	23.23	1-2	-4p 5
4388.16	A	30	20.55	23.36	1-1	-4p 7
4309.10	A	30	20.55	23.41	1-2	-4p 8
4228.97	A	30	20.55	23.47	1-1	-4p 9
3530.75	A	20	20.55	24.05	1-0	-4p 10

For changes in Paschen notation see text § 37

K III I P 46 Anal D List D Nov 1944

3328.40	A	6	25.61	29.32	2½-2½	4s⁴P-4p⁴P° †
3420.82	A	6	25.76	29.37	1½-1½	(1)
3278.79	A	6	25.61	29.37	2½-1½	
3468.32	A	6	25.76	29.32	1½-2½	
3513.88	A	5	25.86	29.37	½-1½	
2992.24	A	6	25.61	29.73	2½-3½	4s⁴P-4p⁴D° †
3052.07	A	6	25.76	29.81	1½-2½	(2)
3056.84	A	5	25.86	29.90	½-1½	
•3481.11 §	B	6	26.26	29.81	1½-2½	4s²P-4p⁴D° (3)
3389.06	B	6	26.26	30.01	1½-2½	4s²P-4p²D° †
3421.83	A	4	26.45	30.05	½-1½	(4)
3301.95	A	6	26.26	30.12	1½-1½	4s²P-4p²P° †
3209.34	A	6	26.45	30.29	½- ½	(5)
3364.22	A	6	26.45	30.12	½-1½	

Ca I I P 6.09 Anal A List B Mar 1944

6572.781	A	50	0.00	1.88	0-1	4¹S-4³P° (1)
4226.728//	A	500R	0.00	2.92	0-1	4¹S-4¹P° (2)
6162.172	A	150	1.89	3.89	2-1	4³P°-5³S
6122.219	A	100	1.88	3.89	1-1	(3)
6102.722	A	80	1.87	3.89	0-1	
4454.781	A	80	1.89	4.66	2-3	4³P°-4³D
4434.960	A	60r	1.88	4.66	1-2	(4)
4425.441	A	50	1.87	4.66	0-1	
4455.887	A	40	1.89	4.66	2-2	
4435.688	A	40	1.88	4.66	1-1	
4456.612	B	10	1.89	4.66	2-1	
4302.527	A	60r	1.89	4.76	2-2	4³P°-4p² 3p
4298.986	A	30	1.88	4.75	1-1	(5)
4318.652	A	45	1.89	4.75	2-1	
4307.741	A	45	1.88	4.74	1-0	
4283.010	A	40	1.88	4.76	1-2	
4289.364	A	40	1.87	4.75	0-1	
3973.707	A	12	1.89	5.00	2-1	4³P°-6³S
3957.053	A	10	1.88	5.00	1-1	(6)
3948.901	A	6	1.87	5.00	0-1	
3933.50	D	(0)	1.88	5.02	1-0	4³P°-4p² ¹S (7)
3761.72	E	(0)	1.88	5.16	1-0	4³P°-6¹S (8)
3644.410	A	40	1.89	5.28	2-3	4³P°-5³D
3630.748	A	30	1.88	5.28	1-2	(9)
3624.111	A	20	1.87	5.28	0-1	
3644.765	A	15	1.89	5.28	2-2	
3630.974	A	15	1.88	5.28	1-1	
3644.990	B	2	1.89	5.28	2-1	
3487.598	A	12	1.89	5.43	2-1	4³P°-7³S
3474.763	A	8	1.88	5.43	1-1	(10)
3468.476	A	4	1.87	5.43	0-1	
3361.918	A	35n•	1.89	5.56	2-3	4³P°-6³D
3350.209	A	25n•	1.88	5.56	1-2	(11)
3344.513	A	8n	1.87	5.56	0-1	
3362.131	B	35n•	1.89	5.56	2-2	
3350.361	B	25n•	1.88	5.56	1-1	
3362.28	B	(0)	1.89	5.56	2-1	
3286.067	A	4	1.89	5.65	2-1	4³P°-8³S
3274.661	B	2	1.88	5.65	1-1	(12)
3269.090	B	1n	1.87	5.65	0-1	
3225.896	A	8n•	1.89	5.72	2-3	4³P°-7³D
3215.145	B	5n•	1.88	5.72	1-2	(13)
3209.930	B	2n	1.87	5.72	0-1	
3226.129	B	8n•	1.89	5.72	2-2	
3215.334	B	5n•	1.88	5.72	1-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ca I continued						
3180.521	B	1N	1.89	5.77	3-1	$4^3P^o-9^3S$
3169.854	B	1N	1.88	5.77	1-1	(14)
3164.618	B	1N	1.87	5.77	0-1	
3150.738	A	4N*	1.89	5.81	2-3	$4^3P^o-8^3D$
3140.782	B	3N*	1.88	5.81	1-2	(15)
3136.003	B	1N	1.87	5.81	0-1	
3151.280	B	4N*	1.89	5.81	2-3	
3141.164	B	3N*	1.88	5.81	1-1	
3117.656	B	1N	1.89	5.85	3-1	$4^3P^o-10^3S$
3107.388	B	1N	1.88	5.85	1-1	(16)
3102.36	B	(0)	1.87	5.85	0-1	
3006.858	A	6	1.89	6.00	2-2	$4^3P^o-3d^2\ ^3P$
2999.641	A	4	1.88	5.99	1-1	(17)
3009.205	A	5	1.89	5.99	2-1	
3000.863	A	5	1.88	5.99	1-0	
2997.309	B	5	1.88	6.00	1-2	
2994.958	A	5	1.87	5.99	0-1	
6439.073	A	150	2.51	4.43	3-4	$3^3D-3d4p^3F^o$
6462.566	A	125	2.51	4.42	2-3	(18)
6493.780	A	80	2.51	4.41	1-2	
6471.660	A	40	2.51	4.42	3-3	
6499.649	A	30	2.51	4.41	2-2	
6508.742	B	(1)	2.51	4.41	3-2	
6464.70	D	(1)	2.51	4.42	3-2	$3^3D-3d4p^1D^o$
6455.600	A	10	2.51	4.42	2-2	(19)
6449.810	A	50	2.51	4.42	1-2	
6169.559	A	40	2.51	4.52	3-2	$3^3D-5^3P^o$
6169.055	A	25	2.51	4.51	2-1	(20)
6166.443	A	15	2.51	4.51	1-0	
6161.289	A	10	2.51	4.52	2-2	
6163.758	A	10	2.51	4.51	1-1	
6156.10	F	(1)	2.51	4.52	1-2	
5588.757	A	80	2.51	4.72	3-3	$3^3D-3d4p^3D^o$
5594.468	A	60	2.51	4.72	2-2	(21)
5598.487	A	50	2.51	4.71	1-1	
5601.285	A	30	2.51	4.72	3-2	
5602.846	A	25	2.51	4.71	2-1	
5581.971	A	25	2.51	4.72	2-3	
5590.120	A	20	2.51	4.72	1-2	
5270.270	A	60	2.51	4.86	3-2	$3^3D-3d4p^3P^o$
5265.557	A	40	2.51	4.86	2-1	(22)
5262.244	A	25	2.51	4.86	1-0	
5264.239	A	20	2.51	4.86	2-2	
5261.706	A	20	2.51	4.86	1-1	
5260.375	A	2	2.51	4.86	1-2	
4585.871	A	50	2.51	5.21	3-4	$3^3D-4^3F^o$
4581.402	A	40	2.51	5.21	2-3	(23)
4578.558	A	30	2.51	5.21	1-2	
4585.923	B	(2)	2.51	5.21	3-3	
4512.282	A	5	2.51	5.25	3-2	$3^3D-6^3P^o$
4509.446	B	3	2.51	5.25	2-1	(24)
4507.417	B	(1)	2.51	5.25	1-0	
4507.854	B	1	2.51	5.25	2-2	
4506.624	B	(1)	2.51	5.25	1-1	
4505.00	E	(0)	2.51	5.25	1-2	
4098.533	A	15	2.51	5.53	3-4	$3^3D-5^3F^o$
4094.930	A	12	2.51	5.53	2-3	(25)
4092.633	A	8	2.51	5.53	1-2	
3875.807	B	(4)	2.51	5.70	3-	$3^3D-6^3F^o$
3872.552	B	(3)	2.51	5.70	2-	(26)
3870.506	B	(2)	2.51	5.70	1-	
3753.367	B	(1)	2.51	5.80	3-	$3^3D-7^3F^o$
3750.349	B	(1)	2.51	5.80	2-	(27)
3748.374	B	(1)	2.51	5.80	1-	
3678.240	B	3	2.51	5.87	3-	$3^3D-8^3F^o$
3675.307	B	2	2.51	5.87	2-	(28)
3673.448	B	1	2.51	5.87	1-	
7202.194	A	200	2.70	4.41	2-2	$3^1D-3d4p^3F^o$
						(29)
7148.147	A	500	2.70	4.42	2-2	$3^1D-3d4p^1D^o$
						(30)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ca I continued						
6798.51	C	6n	2.70	4.51	2-1	$3^1D-5^3P^o$ †
						(31)
6717.685	A	500n	2.70	4.53	2-1	$3^1D-3d4p^1P^o$
						(32)
5349.472	A	25	2.70	5.00	2-3	$3^1D-3d4p^1F^o$
						(33)
5041.620	A	40	2.70	5.15	2-1	$3^1D-5^1P^o$
						(34)
4878.132	A	50	2.70	5.23	2-3	$3^1D-4^1F^o$
						(35)
4526.935	A	30	2.70	5.42	2-1	$3^1D-6^1P^o$
						(36)
4355.096	A	25	2.70	5.53	2-3	$3^1D-5^1F^o$
						(37)
4240.456	A	6	2.70	5.61	2-1	$3^1D-7^1P^o$
						(38)
4108.554	B	10N	2.70	5.70	2-3	$3^1D-6^1F^o$
						(39)
4058.912	B	1n	2.70	5.74	2-1	$3^1D-8^1P^o$
						(40)
3973.570	A	(1)	2.70	5.80	2-3	$3^1D-7^1F^o$
						(41)
3889.141	B	(1)	2.70	5.87	2-3	$3^1D-8^1F^o$
						(42)
10343.85	C	500	2.92	4.11	1-0	$4^1P^o-5^1S$
						(43)
7326.146	A	400	2.92	4.60	1-2	$4^1P^o-4^1D$
						(44)
6709.88	D	(1)	2.92	4.76	1-2	$4^1P^o-4p^2\ ^3P$
						(45)
5867.572	A	1	2.92	5.02	1-0	$4^1P^o-4p^2\ ^1S$
						(46)
5857.454	A	100	2.92	5.03	1-2	$4^1P^o-4p^2\ ^1D$
						(47)
5512.979	A	20n	2.92	5.16	1-0	$4^1P^o-6^1S$
						(48)
5188.848	A	50	2.92	5.30	1-2	$4^1P^o-5^1D$
						(49)
4847.296	A	2	2.92	5.47	1-0	$4^1P^o-7^1S$
						(50)
4685.265	A	12	2.92	5.55	1-2	$4^1P^o-6^1D$
						(51)
12816.06	P)	(50d)	(3.89	4.86	1-2	$5^3S-3d4p^3P^o$
12823.89	P)		3.89	4.86	1-1	(52)
12827.09	P		3.89	4.86	1-0	
6361.79	F	(5n)	4.43	6.37	4-5	$3d4p^3F^o-3d4d^3G$
6343.29	F	(4n)	4.42	6.37	3-4	(53)
6318.11	F	(3n)	4.41	6.36	2-3	
5757.69	F	(4n)	4.43	6.57	4-4	$3d4p^3F^o-3d4d^3F$
5735.74	F	(3n)	4.42	6.57	3-3	(54)
5717.99	F	(4n)	4.41	6.57	2-2	
5761.88	F	(1n)	4.43	6.57	4-3	
5746.81	F	(2N)	4.42	6.57	3-2	
5731.70	F	(1n)	4.42	6.57	3-4	
5707.03	F	(1n)	4.41	6.57	2-3	
9701.81	P	20	4.72	6.00	3-2	$3d4p^3P^o-3d^2\ ^3P$
9688.60	P	15	4.72	5.99	2-1	(55)
9676.25	P	5	4.71	5.99	1-0	
9664.29	P)	5p?	(4.72	6.00	2-2	
9663.58	P)		4.71	5.99	1-1	
9639.40	P		4.71	6.00	1-2	
10838.77	C	10	4.86	6.00	2-2	$3d4p^3P^o-3d^2\ ^3P$
10863.72	C	2	4.86	5.99	1-1	(56)
10869.37	C	3	4.86	5.99	2-1	
10879.78	C	4	4.86	5.99	1-0	
10833.12	C	4	4.86	6.00	1-2	
10861.51	C	3	4.86	5.99	0-1	

Strongest Unclassified Lines of Ca I

7468.41	F	(3)
6405.89	F	(3n)
6395.16	F	(3n)
5764.32	F	(3n)
5743.28	F	(3n)
5688.47	F	(4N)
5682.88	F	(3n)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ca II I P 11.82 Anal A List B Apr 1944						
3933.664//	A	400R(K)	0.00	3.14	½-1½	$4^2S-4^2P^o$
3968.470	A	350R(H)	0.00	3.11	½- ½	(1)
8542.089	B	1500	1.69	3.14	2½-1½	$3^2D-4^2P^o$
8662.140	B	1000	1.69	3.11	1½- ½	(2)
8498.018	B	300	1.69	3.14	1½-1½	
3736.901	B	12	3.14	6.44	1½- ½	$4^2P^o-5^2S$
3706.026	B	10	3.11	6.44	½- ½	(3)
3179.332	B	15	3.14	7.02	1½-2½	$4^2P^o-4^2D$
3158.869	B	10	3.11	7.02	½-1½	(4)
3181.275	B	4	3.14	7.02	1½-1½	
11836.4	P		6.44	7.48	½-1½	$5^2S-5^2P^o$
11947.0	P		6.44	7.47	½- ½	(5)
4473.09	D	(0)	6.44	9.20	½-1½	$5^2S-6^2P^o$
4479.29	D	(1)	6.44	9.20	½- ½	(6)
4732.58	D	(-)	7.02	9.63	2½-	$4^2D-5^2F^o$
4718.16	D	(-)	7.02	9.63	1½-	(7)
3758.36	E	(8)	7.02	10.30	2½-	$4^2D-6^2F^o$
3755.61	E	(7)	7.02	10.30	1½-	(8)
3346.99	E	(10)	7.02	10.71	2½-	$4^2D-7^2F^o$
3125.15	E	(5)	7.02	10.97	2½-	(9)
3123.29	E	(3)	7.02	10.97	1½-	$4^2D-8^2F^o$
2989.42	E	(1)	7.02	11.15	2½-	(10)
2987.72	E	(1)	7.02	11.15	1½-	$4^2D-9^2F^o$
9933.3	P		7.48	8.73	1½- ½	(11)
9856.7	P		7.47	8.73	½- ½	$5^2P^o-6^2S$
8250.2	P		7.48	8.98	1½-2½	(12)
8203.2	P		7.47	8.98	½-1½	$5^2P^o-5^2D$
8256.1	P		7.48	8.98	1½-1½	(13)
5307.30	D	(-)	7.48	9.81	1½- ½	$5^2P^o-7^2S$
5285.34	D	(-)	7.47	9.81	½- ½	(14)
5019.979	B	(2)	7.48	9.94	1½-2½	$5^2P^o-6^2D$
5001.489	C	(1)	7.47	9.94	½-1½	(15)
5021.141	C	(0)	7.48	9.94	1½-1½	
4220.13	D	(-)	7.48	10.41	1½- ½	$5^2P^o-8^2S$
4206.31	D	(-)	7.47	10.41	½- ½	(16)
4109.83	D	(1)	7.48	10.49	1½-2½	$5^2P^o-7^2D$
4097.12	D	(1)	7.47	10.49	½-1½	(17)
4110.33	D	(0)	7.48	10.49	1½-1½	
3694.11	D	(1)	7.48	10.82	1½-2½	$5^2P^o-8^2D$
3683.71	D	(1)	7.47	10.82	½-1½	(18)
3694.31	D	(0)	7.48	10.82	1½-1½	
6456.907	C	(-)	8.40	10.31	—	$4^2F^o-6^2G$
						(19)
5339.29	D	(-)	8.40	10.71	—	$4^2F^o-7^2G$
						(20)

Ca III I P 51.00 Anal D List A Apr 1944						
3372.68	A	8	29.94	33.60	2-1	4s 1°-4p 1
						(1)
3537.75	A	7	30.11	33.60	1-1	4s 3°-4p 1
2988.61	A	7	30.11	34.24	1-2	(2) -4p 3
3761.62	A	6	30.32	33.60	0-1	4s 3°-4p 1
3028.66	A	6	30.32	34.40	0-1	(3) -4p 4
4081.74	A	5	30.58	33.60	1-1	4s 4°-4p 1
3367.81	A	5 1	30.58	34.24	1-2	(4) -4p 3
3233.02	A	4	30.58	34.40	1-1	-4p 4
3119.66	A	8	30.58	34.53	1-2	-4p 5
2989.30	A	6	30.58	34.71	1-1	-4p 7

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Sc I I P 6.7 Anal A Liet C Nov 1940						
8362.386	A	(2)	0.02	1.96	2½-3½	$a^2D-z^4F^o$ (1)
6344.831	A	5	0.00	1.95	1½-2½	
6413.353	A	50	0.02	1.95	2½-2½	
8378.824	A	40	0.00	1.93	1½-1½	
6448.10	B	1	0.02	1.93	2½-1½	
8305.671	A	400	0.02	1.98	2½-3½	$a^2D-z^2D^o$ (2)
8210.676	A	200	0.00	1.99	1½-1½	
6278.310	A	15	0.02	1.99	2½-1½	
8239.410	A	20	0.00	1.98	1½-2½	
6231.76	C	(2)	0.02	2.00	2½-3½	$a^2D-z^4D^o$ (3)
*8193.673	A	(2)	0.00	1.99	1½-2½	
6258.962	A	100	0.02	1.99	2½-2½	
8239.778	A	100	0.00	1.98	1½-1½	
8306.047	A	20	0.02	1.98	2½-1½	
6244.51	C	(1)	0.00	1.98	1½- ½	
5349.703	A	15	0.02	2.33	2½-1½	$a^2D-z^2P^o$ (4)
5342.961	A	10	0.00	2.31	1½- ½	
5301.938	A	2	0.00	2.33	1½-1½	
4779.347	A	20	0.02	2.60	2½-3½	$a^2D-z^2F^o$ (5)
4753.152	A	15	0.00	2.60	1½-2½	
4791.500	A	4	0.02	2.60	2½-2½	
4082.398	A	40	0.02	3.04	2½-1½	$a^2D-y^2P^o$ (6)
•4054.555	A	35	0.00	3.04	(1½-1½ 1½- ½)	
4023.688	A	100	0.02	3.09	2½-2½	$a^2D-y^2D^o$ (7)
4030.399	A	75	0.00	3.07	1½-1½	
4047.792	A	25	0.02	3.07	2½-1½	
3996.607	A	30	0.00	3.09	1½-2½	
3911.810	A	100	0.02	3.18	2½-3½	$a^2D-y^2F^o$ (8)
3907.478	A	75	0.00	3.16	1½-2½	
3933.381	A	20	0.02	3.16	2½-2½	
3273.619	A	20	0.02	3.79	2½-1½	$a^2D-x^2P^o$ (9)
3269.904	A	15	0.00	3.77	1½- ½	
3255.678	A	6	0.00	3.79	1½-1½	
3019.350	A	10	0.02	4.11	2½-3½	$a^2D-x^2F^o$ (10)
3015.364	A	8	0.00	4.09	1½-2½	
3030.769	A	3	0.02	4.09	2½-2½	
2980.752	A	(6)	0.02	4.16	2½-2½	$a^2D-x^2D^o$ (11)
2974.006	A	(5)	0.00	4.15	1½-1½	
*2988.953§	A	(10)	0.02	4.15	2½-1½	
2965.88	B	(2)	0.00	4.16	1½-2½	
5671.805//	A	300	1.44	3.82	4½-5½	$a^4F-z^4G^o$ (12)
5688.826	A	150	1.43	3.60	3½-4½	
5700.14	B	100	1.43	3.59	2½-3½	
5711.754	A	100	1.43	3.58	1½-2½	
5708.800	A	15	1.44	3.60	4½-4½	
5717.30	B	15	1.43	3.59	3½-3½	
5734.073	A	15	1.43	3.58	2½-2½	
5739.30	B	2	1.44	3.59	4½-3½	
5741.36	B	1	1.43	3.58	3½-2½	
5081.554	A	125	1.44	3.87	4½-4½	$a^4F-y^4F^o$ (13)
5083.713	A	80	1.43	3.86	3½-3½	
5085.547	A	40	1.43	3.85	2½-2½	
5088.951	A	40	1.43	3.85	1½-1½	
5101.121	A	20	1.44	3.86	4½-3½	
•5099.228	A	40	1.43	3.85	3½-2½	
5098.718	A	30	1.43	3.85	2½-1½	
5064.321	A	10	1.43	3.87	3½-4½	
5070.249	A	40	1.43	3.86	2½-3½	
5075.814	A	10	1.42	3.85	1½-2½	
4743.814	A	40	1.44	4.04	4½-3½	$a^4F-y^4D^o$ (14)
4741.018	A	30	1.43	4.04	3½-2½	
4737.642	A	20	1.43	4.03	2½-1½	
4734.094	A	15	1.42	4.03	1½- ½	
4738.769	A	5	1.43	4.04	3½-3½	
•4729.226	A	30	1.43	4.04	2½-2½	
4717.031	A	(1)	1.43	4.03	1½-1½	
4730.830	A	(0)	1.43	4.04	2½-3½	
5520.498	A	100	1.42	4.04	1½-2½	$a^2F-z^2G^o$ (15)
5514.215	A	80	1.88	4.09	3½-4½	
5549.68	B	(3)	1.84	4.08	2½-3½	
5481.989	A	100	1.86	4.11	3½-3½	$a^2F-x^2F^o$ † (16)
5484.818	A	80	1.84	4.09	2½-2½	
5356.100	A	60	1.88	4.16	3½-2½	$a^2F-x^2D^o$ † (17)
5349.294	A	50	1.84	4.15	2½-1½	
5591.322	A	15	1.98	4.19	4½-4½	$z^4F^o-e^4F$ † (18)
5564.861	A	4	1.96	4.18	3½-3½	
5541.030	A	3	1.95	4.17	2½-2½	
5526.06	B	(4)	1.93	4.17	1½-1½	
5392.075	A	30	1.98	4.27	4½-3½	$z^4F^o-e^4D$ † (19)
5375.346	A	20	1.98	4.28	3½-2½	
5355.752	A	8	1.95	4.25	2½-1½	
5341.040	A	8	1.93	4.25	1½- ½	
4165.184	A	12	1.98	4.94	4½-5½	$z^4F^o-e^4G$ † (20)
4152.355	A	12	1.96	4.93	3½-4½	
4140.304	A	10	1.95	4.93	2½-3½	
4133.008	A	8	1.93	4.92	1½-2½	
3435.555	A	5	1.98	5.57	4½-4½	$z^4F^o-h^4F$ (21)
3431.358	A	3	1.96	5.56	3½-3½	
3429.206	A	3	1.95	5.54	2½-2½	
3429.483	A	3	1.93	5.53	1½-1½	
3448.503	A	1	1.98	5.56	4½-3½	
3443.989	A	1	1.96	5.54	3½-2½	
3439.40	A	1	1.95	5.53	2½-1½	
3418.528	A	(2)	1.96	5.57	3½-4½	
3416.674	A	2	1.95	5.56	2½-3½	
3419.358	A	(1)	1.93	5.54	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Sc I continued						
4709.336	A	5	2.29	4.91	2½-3½	$z^4P^o-f^4D$ † (22)
4706.967	A	(3)	2.29	4.91	1½-2½	
4711.732	A	(1)	2.28	4.90	½-1½	
5258.333	A	15	2.50	4.85	4½-5½	$a^2G-z^2H^o$ † (23)
5285.752	A	10	2.50	4.83	3½-4½	
6557.87	B)	15•	(2.60	4.48	3½-2½	$z^2F^o-f^2D$ (24)
6558.05	B		2.60	4.48	2½-1½	
Strongest Unclassified Lines of **Sc I**						
6835.03	B	(25)				
6817.08	A	(10)				
6737.87	A	(10)				
6036.17	B	(10nl)				
4573.993	A	6	III			
4557.237	A	5	III			
Sc II I P 12.8 Anal A Liet A Nov 1940						
3859.36	P		0.02	3.22	3-2	$a^3D-z^1D^o$ (1)
3843.000	A	4	0.01	3.22	2-2	
3833.059	A	3	0.00	3.22	1-2	
3613.836//	A	60	0.02	3.44	3-4	$a^3D-z^3F^o$ (2)
3630.740	A	50	0.01	3.41	2-3	
3642.785	A	40	0.00	3.39	1-2	
3645.311	A	30	0.02	3.41	3-3	
3651.798	A	25	0.01	3.39	2-2	
3666.537	A	3	0.02	3.39	3-2	
3573.523	A	50	0.02	3.48	3-3	$a^3D-z^3D^o$ (3)
3576.340	A	35	0.01	3.46	2-2	
3580.937	A	30	0.00	3.45	1-1	
3590.475	A	20	0.02	3.46	3-2	
3589.835	A	20	0.01	3.45	2-1	
3558.538	A	20	0.01	3.48	2-3	
3567.701	A	20	0.00	3.46	1-2	
3372.151	A	20	0.02	3.68	3-2	$a^3D-z^3P^o$ (4)
3368.946	A	15	0.01	3.67	2-1	
3381.935	A	12	0.00	3.67	1-0	
3359.679	A	10	0.01	3.68	2-2	
3361.270	A	10	0.00	3.67	1-1	
3352.048	A	3	0.00	3.68	1-2	
3251.32	A	3	0.01	3.80	2-1	$a^3D-z^1P^o$ (5)
3244.17	P		0.00	3.80	1-1	
3107.387	A	(1)	0.02	3.99	3-3	$a^3D-z^1F^o$ (6)
3096.77	P		0.01	3.99	2-3	
4246.829	A	100	0.31	3.22	2-2	$a^1D-z^1D^o$ (7)
3989.06	B	2	0.31	3.41	2-3	$a^1D-z^3P^o$ (8)
4014.489	A	5	0.31	3.39	2-2	
3902.09	P		0.31	3.48	2-3	$a^1D-z^3D^o$ (9)
3923.503	A		0.31	3.46	2-2	
3939.51	P		0.31	3.45	2-1	
3664.254	A	1	0.31	3.68	2-2	$a^1D-z^3P^o$ (10)
3675.265	A	1	0.31	3.67	2-1	
3535.729	A	10	0.31	3.80	2-1	$a^1D-z^1P^o$ (11)
3353.734	A	25	0.31	3.99	2-3	$a^1D-z^1F^o$ (12)
4716.13	P		0.60	3.22	3-2	$a^3F-z^1D^o$ (13)
4698.276	A	(2)	0.59	3.22	2-2	
4374.455	A	40	0.62	3.44	4-4	$a^3F-z^3F^o$ (14)
4400.355	A	30	0.60	3.41	3-3	
4415.559	A	20	0.59	3.39	2-2	
4420.665	A	2	0.62	3.41	4-3	
4431.369	A	3	0.60	3.39	3-2	
4354.609	A	5	0.60	3.44	3-4	
4384.813	A	6	0.59	3.41	2-3	
4314.084	A	60	0.62	3.48	4-3	$a^3F-z^3D^o$ (15)
4320.745	A	50	0.60	3.46	3-2	
4325.010	A	40	0.59	3.45	2-1	
4294.767	A	8	0.60	3.48	3-3	
4305.715	A	10	0.59	3.46	2-2	
4279.927	A	1	0.59	3.48	2-3	
4008.41	P		0.60	3.68	3-2	$a^3F-z^3P^o$ (16)
4008.60	P		0.59	3.67	2-1	
3995.49	P		0.59	3.68	2-2	
3843.16	P		0.59	3.80	2-1	$a^3F-z^1P^o$ (17)
3653.62	P		0.62	3.99	4-3	$a^3F-z^1F^o$ (18)
3639.76	P		0.60	3.99	3-3	
3629.10	P		0.59	3.99	2-3	
6604.60	B	10	1.35	3.22	2-2	$b^1D-z^1D^o$ (19)
6001.53	P		1.35	3.41	2-3	$b^1D-z^3F^o$ (20)
6059.25	P		1.35	3.39	2-2	
5806.77	P		1.35	3.48	2-3	$b^1D-z^3D^o$ (21)
5854.31	P		1.35	3.46	2-2	
5890.02	P		1.35	3.45	2-1	
5295.30	P		1.35	3.68	2-2	$b^1D-z^3P^o$ (22)
5318.337	A	3	1.35	3.67	2-1	
5031.019	A	40	1.35	3.80	2-1	$b^1D-z^1P^o$ (23)
4670.404	A	15	1.35	3.99	2-3	$b^1D-z^1F^o$ (24)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Sc II continued						
5552.25	B	3	1.45	3.67	0-1	$a^1S-z^3P^o$ (25)
5239.823	A	15	1.45	3.80	0-1	$a^1S-z^1P^o$ (26)
7178.33	P		1.50	3.22	2-2	$a^3P-z^1D^o$ (27)
7151.18	P		1.49	3.22	1-2	
6245.629	A	30	1.50	3.48	2-3	$a^3P-z^3D^o$ (28)
6279.757	A	15	1.49	3.46	1-3	
6309.902	A	15	1.49	3.45	0-1	
6300.697	A	6	1.50	3.46	2-2	
6320.854	A	7	1.49	3.45	1-1	
6342.082	A	1	1.50	3.45	2-1	
5657.870	A	25	1.50	3.68	2-2	$a^3P-z^3P^o$ (29)
5667.164	A	10	1.49	3.67	1-1	
5684.190	A	15	1.50	3.67	2-1	
5669.030	A	12	1.49	3.67	1-0	
5640.971	A	15	1.49	3.68	1-2	
5658.334	A	8	1.49	3.67	0-1	
5357.195	A	2	1.50	3.80	2-1	$a^3P-z^1P^o$ (30)
5342.05	P		1.49	3.80	1-1	
5334.228	A	2	1.49	3.80	0-1	
5526.809	A	75	1.76	3.99	4-3	$a^1G-z^1F^o$ (31)
3157.44	P		3.22	7.13	2-3	$z^1P^o-e^3D$ (32)
3170.40	B	1	3.22	7.11	2-2	
3176.70	P		3.22	7.10	2-1	
3107.529	A	6	3.22	7.19	2-2	$z^1D^o-e^1D$ (33)
*2988.952§	A	10	3.22	7.35	2-3	$z^1D^o-e^1F$ (34)
3343.27	A	4	3.44	7.13	4-3	$z^3F^o-e^3D$ (35)
3331.07	A	3	3.41	7.11	3-2	
3330.422	A	3	3.39	7.10	2-1	
3316.79	B	1†	3.41	7.13	3-3	
3313.539	A	0†	3.39	7.11	2-2	
3299.41	P		3.39	7.13	2-3	
3108.511	A	3	3.44	7.41	4-3	$z^3F^o-f^3D$ (36)
3092.519	A	2	3.41	7.40	3-2	
3082.56	A	2	3.39	7.39	2-1	
3065.106	A	30	3.44	7.46	4-5	$z^3F^o-e^3G$ (37)
3052.929	A	20	3.41	7.45	3-4	
3045.714	A	15	3.39	7.44	2-3	
3075.38	B	3	3.44	7.45	4-4	
3060.531	A	3	3.41	7.44	3-3	
3083.07	P		3.44	7.44	4-3	
3379.397	A	3	3.48	7.13	3-3	$z^3D^o-e^3D$ (38)
3378.209	A	2	3.46	7.11	2-2	
3373.57	B	1†	3.45	7.10	1-1	
3394.29	B	1	3.48	7.11	3-2	
3363.501	A	1	3.46	7.13	2-3	
3366.46	B	1	3.45	7.11	1-2	
3139.729	A	10	3.48	7.41	3-3	$z^3D^o-f^3D$ (39)
3133.096	A	8	3.46	7.40	2-2	
3128.286	A	5	3.45	7.39	1-1	
3146.91	B	1	3.48	7.40	3-2	
3138.46	B	1	3.46	7.39	2-1	
3126.02	B	1	3.46	7.41	2-3	
3122.954	A	3	3.45	7.40	1-2	
3580.71	P		3.68	7.13	2-3	$z^3P^o-e^3D$ (40)
3586.83	P		3.67	7.11	1-2	
3594.13	P		3.67	7.10	0-1	
3597.39	P		3.68	7.11	2-2	
3594.89	P		3.67	7.10	1-1	
3605.50	P		3.68	7.10	2-1	
3312.736	A	5	3.68	7.41	2-3	$z^3P^o-f^3D$ (41)
3311.708	A	3	3.67	7.40	1-2	
3317.038	A	1	3.67	7.39	0-1	
3320.709	A	1	3.68	7.40	2-2	
3317.693	A	1	3.67	7.39	1-1	
3326.74	P		3.68	7.39	2-1	
3199.37	A	10	3.68	7.54	2-1	$z^3P^o-e^3S$ (42)
3191.005	A	5	3.67	7.54	1-1	
3190.403	A	2	3.67	7.54	0-1	
3379.18	A	2	3.80	7.46	1-1	$z^1P^o-e^1P$ (43)
2979.683	A	5	3.80	7.95	1-2	$z^1P^o-f^1D$ (44)
3678.342	A	2	3.99	7.35	3-3	$z^1F^o-e^1F$ (45)
3122.542	A	1	3.99	7.95	3-2	$z^1F^o-f^1D$ (46)
3039.92	A	10	3.99	8.05	3-4	$z^1F^o-e^1G$ (47)
4748.12	P		4.86	7.46	2-1	$y^3P^o-e^1P$ (48)
4696.71	P		4.83	7.46	1-1	
4671.94	P		4.81	7.46	0-1	
3995.48	P		4.86	7.95	2-2	$y^3P^o-f^1D$ (49)
3959.01	P		4.83	7.95	1-2	

Sc III I P 24.65 Anal C List A Jan 1941						
4068.7	A	(2n)	13.86	16.90	2½-3½	$4^2D-4^2F^o$ (1)
4061.3	A	(2n)	13.86	16.90	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I I P 6.81 Anal A List B Nov 1940						
*6295.251	E	(2)	0.05	2.01	4-5	$a^3F\text{-}z^5G^\circ$
6273.389	E	(6)	0.03	1.99	3-4	(1)
6257.72	H	(2)	0.00	1.97	2-3	
6359.896	E	(8)	0.05	1.99	4-4	
6325.22	H	(10)	0.03	1.97	3-3	
6296.646	E	(12)	0.00	1.96	2-2	
6413.13	P		0.05	1.97	4-3	
6364.92	H	(2)	0.03	1.96	3-2	
5940.68	E	-	0.05	2.13	4-5	$a^3F\text{-}z^5F^\circ$
5913.730	E	-	0.03	2.11	3-4	(2)
6031.68	E	-	0.05	2.09	4-3	
5984.586	E	(1)	0.03	2.08	3-2	
5944.65	P		0.00	2.08	2-1	
5460.502	B	4	0.05	2.31	4-4	$a^3F\text{-}z^5D^\circ$
5426.256	B	3	0.02	2.30	3-3	(3)
*5396.600	E	1	0.00	2.29	2-2	
5490.840	B	(0)	0.05	2.30	4-3	
*5446.593	B	2	0.03	2.29	3-2	
5408.940	E	(1)	0.03	2.28	2-1	
*5396.600	E	1	0.03	2.31	3-4	
5376.59	P		0.00	2.30	2-3	
5210.386	A	40	0.05	2.42	4-4	$a^3F\text{-}z^3F^\circ$
5192.971	A	35	0.03	2.40	3-3	(4)
5173.742	A	30	0.00	2.39	2-2	
5252.105	B	8	0.05	2.40	4-3	
5219.697	B	8	0.03	2.39	3-2	
5152.185	B	10	0.03	2.42	3-4	
5147.483	A	10	0.00	2.40	2-3	
5064.654	A	25	0.05	2.48	4-3	$a^3F\text{-}z^3D^\circ$
5039.959	A	22	0.03	2.47	3-2	(5)
5014.185	A	(25)	0.00	2.46	2-1	
5009.652	A	7	0.03	2.48	3-3	
4997.099	A	8	0.00	2.47	2-2	
4967.30	H	(1)	0.00	2.48	2-3	
4681.908	A	30	0.05	2.68	4-5	$a^3F\text{-}z^3G^\circ$
4667.585	A	25	0.03	2.67	3-4	(6)
4656.468	A	25	0.00	2.65	2-3	
4715.295	A	4	0.05	2.67	4-4	
4693.670	B	5	0.03	2.65	3-3	
4562.637	B	6	0.03	2.73	3-2	$a^3F\text{-}z^1D^\circ$
4527.455	E	(4)	0.00	2.73	2-2	(7)
4540.483	E	1	0.05	2.77	4-3	$a^3F\text{-}z^1F^\circ$
4496.245	E	2	0.03	2.77	3-3	(8)
4462.099	B	(3)	0.00	2.77	2-3	
4112.708	A	20	0.05	3.05	4-4	$a^3F\text{-}z^1G^\circ$
4076.370	B	4	0.03	3.05	3-4	(9)
4011.534	E	(3)	0.00	3.08	2-1	$a^3F\text{-}z^3S^\circ$ (10)
4009.653	B	15	0.02	3.10	3-2	$a^3F\text{-}z^5S^\circ$
3982.478	B	30	0.00	3.10	2-2	(11)
3998.635	A	100R	0.05	3.13	4-4	$a^3F\text{-}y^3F^\circ$
3989.758	A	80r	0.02	3.11	3-3	(12)
3981.761	A	70r	0.00	3.10	2-2	
4024.573	A	35	0.05	3.11	4-3	
4008.926	A	35	0.02	3.10	3-2	
3964.269	A	35	0.02	3.13	3-4	
3963.851	A	35	0.00	3.11	2-3	
3958.206	A	80	0.05	3.17	4-3	$a^3F\text{-}y^3D^\circ$
3956.336	A	60	0.02	3.14	3-2	(13)
3948.670	A	60	0.00	3.13	2-1	
3924.527	A	50	0.02	3.17	3-3	
3929.875	A	40	0.00	3.14	2-2	
3898.487	B	8	0.00	3.17	2-3	
3947.770	A	40	0.02	3.15	3-2	$a^3F\text{-}z^3P^\circ$
3914.751	B	5	0.00	3.15	2-1	(14)
3921.423	A	30	0.00	3.15	2-2	
3914.334	A	35	0.05	3.20	4-4	$a^3F\text{-}y^5D^\circ$
3900.958	B	12	0.02	3.18	3-3	(15)
3889.948	B	6	0.00	3.17	2-2	
3934.328	B	9	0.05	3.18	4-3	
3915.879	B	3	0.02	3.17	3-2	
*3899.668	B	(2)	0.00	3.16	2-1	
3881.399	E	4	0.02	3.20	3-4	
*3875.262	A	20n	0.00	3.18	2-3	
3788.804	E	2	0.05	3.31	4-5	$a^3F\text{-}y^5G^\circ$
3774.331	E	1n	0.02	3.29	3-4	(16)
3752.860	A	80r	0.05	3.34	4-4	$a^3F\text{-}x^3F^\circ$
3741.059	A	60r	0.02	3.32	3-3	(17)
3729.806	A	50r	0.00	3.31	2-2	
3771.652	A	25	0.05	3.32	4-3	
3753.623	B	25	0.02	3.31	3-2	
3732.568	A	15†	0.02	3.34	3-4	
3717.393	A	20	0.00	3.32	2-3	
3689.916	A	15	0.05	3.39	4-3	$a^3F\text{-}x^3D^\circ$
3668.965	A	15	0.02	3.38	3-2	(18)
3654.592	A	15	0.00	3.38	2-1	
3660.631	A	12	0.02	3.39	3-3	
3646.198	A	12	0.00	3.38	2-2	
3637.966	E	10	0.00	3.39	2-3	
3653.497	A	100r	0.05	3.43	4-5	$a^3F\text{-}y^3G^\circ$
3642.675	A	80r	0.02	3.41	3-4	(19)
3635.463	A	80r	0.00	3.39	2-3	
3671.672	A	20	0.05	3.41	4-4	
3658.097	A	20	0.02	3.39	3-3	
3687.354	E	5	0.05	3.39	4-3	
3635.202	E	8	0.05	3.44	4-3	$a^3F\text{-}z^5P^\circ$
3626.085	E	4	0.02	3.43	3-2	(20)
3606.786	E	4	0.02	3.44	3-3	
3603.845	E	2	0.00	3.43	2-2	
3604.384	E	8	0.03	3.45	3-2	$a^3F\text{-}y^1D^\circ$ (21)
Ti I continued						
3506.643	E	8	0.05	3.57	4-5	$a^3F\text{-}y^5F^\circ$
3493.280	E	4	0.02	3.55	3-4	(22)
3483.010	E	(1)	0.00	3.54	2-3	
3519.939	E	1	0.05	3.55	4-4	
3503.760	E	1	0.02	3.54	3-3	
3490.765	E	1	0.00	3.54	2-2	
3530.580	E	1	0.05	3.54	4-3	
3511.626	E	3	0.02	3.54	3-2	
3495.960	E	2	0.00	3.53	2-1	
3385.944	A	40r	0.05	3.69	4-3	$a^3F\text{-}w^3D^\circ$
3377.577	A	30r	0.02	3.67	3-2	(23)
3370.436	A	40r	0.00	3.66	2-1	
3361.263	E	40r	0.02	3.69	3-3	
3358.271	A	10	0.00	3.67	2-2	
3343.151	E	6	0.00	3.69	2-3	
3371.447	A	80R	0.05	3.71	4-5	$a^3F\text{-}x^3G^\circ$
3354.634	A	60r	0.02	3.70	3-4	(24)
*3341.875§	A	50r	0.00	3.69	2-3	
3379.216	E	15	0.05	3.70	4-4	
3360.990	E	10	0.02	3.69	3-3	
3385.664	E	12	0.05	3.69	4-3	
3369.054	E	1	0.05	3.71	4-4	$a^3F\text{-}x^5D^\circ$
3353.937	E	6	0.02	3.70	3-3	(25)
3342.707	E	2	0.00	3.69	2-2	
3377.485	E	20	0.05	3.70	4-3	
3361.835	E	10	0.02	3.69	3-2	
3348.535	E	5	0.00	3.69	2-1	
3344.62	P		0.02	3.71	3-4	
3333.912	E	2	0.00	3.70	2-3	
3243.803	E	4	0.05	3.85	4-3	$a^3F\text{-}y^3D^\circ$
3232.741	E	3	0.02	3.85	3-2	(26)
3205.848	E	5	0.00	3.85	2-1	
3231.151	E	2	0.02	3.85	3-3	
3205.168	E	2	0.00	3.85	2-2	
3203.58	G	(2)	0.00	3.85	2-3	
3199.915	A	100R	0.05	3.90	4-5	$a^3F\text{-}w^3G^\circ$
3191.994	A	80R	0.02	3.89	3-4	(27)
3186.451	A	60r	0.00	3.87	2-3	
3214.240	A	12	0.05	3.89	4-4	
3203.828	E	15	0.02	3.87	3-3	
3226.240	E	1	0.05	3.87	4-3	
3160.09	G	tr	0.02	3.93	3-2	$a^3F\text{-}y^3P^\circ$
3151.11	G	tr	0.00	3.93	2-1	(28)
3143.16	P		0.00	3.93	2-2	
3000.868	E	20	0.05	4.16	4-4	$a^3F\text{-}w^3F^\circ$
2983.306	E	20	0.02	4.16	3-3	(29)
2970.384	E	10	0.00	4.15	2-2	
*3003.728	E	3	0.05	4.16	4-3	
2985.477	E	3	0.02	4.15	3-2	
2981.448	E	(2)	0.02	4.16	3-4	
2968.231	E	4	0.00	4.16	2-3	
2956.133	A	70R	0.05	4.22	4-4	$a^3F\text{-}v^3F^\circ$ †
2967.325	E	25	0.05	4.21	4-3	(30)
2956.797	E	25	0.02	4.19	3-2	
10396.85	C	25	0.84	2.03	5-6	$a^5F\text{-}z^5G^\circ$
10498.14	C	30	0.83	2.01	4-5	(31)
10584.66	C	25	0.82	1.99	3-4	
10661.61	C	20	0.81	1.97	2-3	
10736.33	C	18	0.81	1.96	1-2	
10607.78	C	10	0.84	2.01	5-5	
10677.04	C	10	0.83	1.99	4-4	
10732.89	C	8	0.82	1.97	3-3	
*10774.92	C	12	0.81	1.96	2-3	
10793.59	P		0.84	1.99	5-4	
10828.04	C	1	0.83	1.97	4-3	
10847.72	C	1	0.82	1.96	3-2	
9638.28	D	100	0.84	2.13	5-5	$a^5F\text{-}z^5F^\circ$
9675.55	D	90	0.83	2.11	4-4	(32)
9705.64	D	80	0.82	2.09	3-3	
9728.36	D	60	0.81	2.08	2-2	
9743.60	D	50	0.81	2.08	1-1	
9770.28	D	40	0.84	2.11	5-4	
9783.30	D	40	0.83	2.09	4-3	
9787.67	D	50	0.82	2.08	3-2	
9783.59	D	20	0.81	2.08	2-1	
9546.07	D	50	0.83	2.13	4-5	
9599.53	D	50	0.82	2.11	3-4	
9647.40	D	50	0.81	2.09	2-3	
9688.86	D	30	0.81	2.08	1-2	
8434.98	D	300	0.84	2.31	5-4	$a^5F\text{-}z^5D^\circ$
8435.68	D	300	0.83	2.30	4-3	(33)
8426.50	D	200	0.82	2.29	3-2	
8412.36	D	150	0.81	2.28	2-1	
8396.93	D	90	0.81	2.28	1-0	
8364.24	E	(2)	0.83	2.31	4-4	
8377.90	D	100	0.82	2.30	3-3	
8382.54	D	100	0.81	2.29	2-3	
8382.82	D	90	0.81	2.28	1-1	
8307.41	E	(1)	0.82	2.31	3-4	
8334.37	E	(2)	0.81	2.30	2-3	
8353.15	E	(2)	0.81	2.29	1-2	
7852.74	P		0.84	2.42	5-4	$a^5F\text{-}z^3F^\circ$
7885.00	P		0.83	2.40	4-3	(34)
7895.50	P		0.82	2.39	3-2	
5361.734	E	(1)	0.83	3.13	4-4	$a^5F\text{-}y^3F^\circ$
5384.634	E	(1)	0.82	3.11	3-3	(35)
5401.32	H	(1)	0.81	3.10	2-2	
5338.326	E	1	0.82	3.13	3-4	
5366.651	B	2	0.81	3.11	2-3	
5389.180	B	2	0.81	3.10	1-2	
5289.28	E	(1)	0.83	3.17	4-3	$a^5F\text{-}y^3D^\circ$
5323.958	E	(1)	0.82	3.14	3-2	(36)
5340.68	H	(1)	0.81	3.13	2-1	
5266.49	P		0.82	3.17	3-3	
Ti I continued						
*5238.560	B	6	0.84	3.20	5-4	$a^5F\text{-}y^5D^\circ$
5246.574	E	3	0.83	3.18	4-3	(37)
5250.95	E	2	0.82	3.17	3-2	
5251.49	E	(0)	0.81	3.16	2-1	
*5248.402	E	(1)	0.81	3.16	1-0	
5211.32	P	(1)	0.83	3.20	4-4	
5234.14	P	(0)	0.82	3.18	3-3	
5233.817	E	(1)	0.81	3.17	2-2	
5239.942	E	(0)	0.81	3.16	1-1	
4981.732//	A	60	0.84	3.32	5-6	$a^5F\text{-}y^5G^\circ$
4991.067	A	50	0.83	3.31	4-5	(38)
4999.504	A	45	0.82	3.29	3-4	
5007.209	A	40	0.81	3.28	2-3	
5014.377	A	(25)	0.81	3.27	1-2	
5016.162	A	20	0.84	3.31	5-5	
5020.038	A	25	0.83	3.29	4-4	
5023.871	A	25	0.82	3.28	3-3	
5024.842	A	20	0.81	3.27	2-2	
5045.400	B	5	0.84	3.29	5-4	
5043.578	B	7	0.83	3.28	4-3	
5040.642	B	6	0.82	3.27	3-2	
4953.37	P		0.84	3.34	5-4	$a^5F\text{-}x^3F^\circ$
4938.895	E	(0)	0.83	3.34	4-4	(39)
4941.382	E	(1)	0.82	3.32	3-3	
4947.994	E	1	0.81	3.31	2-2	
4909.105	B	2	0.82	3.34	3-4	
4926.148	B	4	0.81	3.32	2-3	
4937.719	B	4	0.81	3.31	1-2	
4801.93	P		0.82	3.39	3-3	$a^5F\text{-}x^3D^\circ$
4801.90	P		0.81	3.38	2-2	(40)
4806.75	P		0.81	3.38	1-1	
4787.64	P		0.81	3.39	2-3	
4793.34	P		0.81	3.38	1-2	
4816.47	P		0.81	3.38	2-1	
4781.718	B	6	0.84	3.43	5-5	$a^5F\text{-}y^3G^\circ$
4789.803	E	(1)	0.83	3.41	4-4	(41)
4812.906	E	(0)	0.84	3.41	5-4	
4758.913	B	4	0.83	3.43	4-5	
4771.103	B	3	0.82	3.41	3-4	
4783.306	E	(2)	0.81	3.39	2-3	
4533.238	A	80	0.84	3.57	5-5	$a^5F\text{-}y^5F^\circ$
4534.782	B	60	0.83	3.55	4-4	(42)
4535.574	B	50	0.82	3.54	3-3	
4535.920	B	40	0.81	3.54	2-2	
4536.051	B	40	0.81	3.53	1-1	
4555.486	A	30	0.84	3.55	5-4	
4552.453	A	35	0.83	3.54	4-3	
4548.764	A	35	0.82	3.54	3-2	
4544.688	A	30	0.81	3.53	2-1	
4512.734	A	40	0.83	3.57	4-5	
4518.032	A	50	0.82	3.55	3-4	
4522.798	A	40	0.81	3.54	2-3	
4527.305	A	35	0.81	3.54	1-2	
4314.801	A	25•	0.83	3.69	4-3	$a^5F\text{-}w^3D^\circ$
4326.359	B	9	0.82	3.67	3-2	(43)
4334.840	B	2	0.81	3.66	2-1	
4299.636	B	15	0.83	3.69	3-3	
4314.74	P	25•	0.81	3.67	2-3	
4326.986	B	2	0.81	3.66	1-1	
*4288.161	B	3	0.81	3.69	2-3	
4306.945	E	1	0.81	3.67	1-2	
4305.910	A	60	0.84	3.71	5-4	$a^5F\text{-}x^5D^\circ$
4301.089	B	50	0.83	3.70	4-3	(44)
4300.566	B	50	0.82	3.69	3-2	
4298.664	A	40	0.81	3.69	2-1	
4295.751	A	22	0.81	3.68	1-0	
4287.405	A	22	0.83	3.71	4-4	
4286.006	A	25	0.82	3.70	3-3	
4289.068	A	25	0.81	3.69	2-2	
4290.933	B	22	0.81	3.69	1-1	
4272.440	B	8	0.82	3.71	3-4	
*4274.584	A	15	0.81	3.70	2-3	
4281.371	A	10	0.81	3.69	1-2	
*4291.214	B	5n	0.83	3.71	4-5	$a^5F\text{-}x^3G^\circ$
4288.78	P		0.82	3.70	3-4	(45)
4287.71	P		0.81	3.69	2-3	
4314.356	B	5	0.83	3.69	4-3	
4299.17	P		0.82	3.69	3-3	
3457.494	E	4	0.84	4.41	5-4	$a^5F\text{-}w^5D^\circ$
3458.020	E	3	0.83	4.40	4-3	(46)
3457.298	E	2	0.82	4.39	3-2	
3455.755	E	1	0.81	4.39	2-1	
3453.654	E	tr	0.81	4.38	1-0	
3445.566	E	1	0.83	4.41	4-4	
3448.355	E	1	0.82	4.40	3-3	
3449.874	E	2	0.81	4.39	2-3	
3450.735	E	1	0.81	4.39	1-1	
3444.899	E	tr	0.81	4.39	1-2	
3240.84	P		0.84	4.65	5-5	$a^5F\text{-}y^3G^\circ$
3235.95	P		0.82	4.64	3-3	(47)
3244.53	P		0.83	4.64	4-3	
6743.124	A	10	0.90	2.73	2-2	$a^1D\text{-}z^1D^\circ$ (48)
6599.112	E	12	0.90	2.77	2-3	$a^1D\text{-}z^1F^\circ$ (49)
5659.104	E	(3)	0.90	3.08	2-1	$a^1D\text{-}z^3S^\circ$ (50)
5436.703	B	1	0.90	3.17	2-3	$a^1D\text{-}y^3D^\circ$
5497.92	P		0.90	3.14	2-2	(51)
4943.074	E	(0)	0.90	3.39	2-3	$a^1D\text{-}x^3D^\circ$
4958.26	P	2	0.90	3.38	2-2	(52)
4840.874	A	25	0.90	3.45	2-2	$a^1D\text{-}y^1D^\circ$ (53)
4412.436	B	1	0.90	3.69	2-3	$a^1D\text{-}w^3D^\circ$ (54)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
•4174.088§	B	(1)	0.90	3.85	2-3	a^1D-v^3D^o (55)
3904.785	A	40n	0.90	4.06	2-3	a^1D-y^1F^o (56)
3786.043	A	20	0.90	4.16	2-1	a^1D-z^1P^o (57)
3610.154	A	12	0.90	4.31	2-1	a^1D-y^1P^o (58)
3598.714	A	15	0.90	4.33	2-2	a^1D-x^1D^o (59)
3334.61	G	1	0.90	4.61	2-2	a^1D-w^3P^o
•3341.554	E	1	0.90	4.59	2-1	(60)
3299.413	E	10	0.90	4.64	2-3	a^1D-v^3G^o (61)
3292.078	A	20	0.90	4.64	2-3	a^1D-x^1F^o (62)
•3278.928§	E	(12)	0.90	4.66	2-3	a^1D-u^3F^o
m3288.59	P	Ti+	0.90	4.65	2-2	(63)
3267.41	E	tr	0.90	4.67	2-1	a^1D-u^3D^o (64)
3173.731	E	4	0.90	4.79	2-3	a^1D-t^3D^o
3179.291	E	3	0.90	4.78	2-2	(65)
3141.537	E	15	0.90	4.82	2-1	a^1D-x^1P^o (66)
3123.074	E	15	0.90	4.85	2-1	a^1D-w^1P^o (67)
8675.38	D	150	1.06	2.48	2-3	a^3P-z^3D^o
8683.99	D	125	1.05	2.47	1-2	(68)
8693.34	D	100	1.04	2.46	0-1	
8766.84	D	75	1.06	2.47	2-2	
8734.70	D	75	1.05	2.46	1-1	
8819.39	D	8	1.06	2.46	2-1	
6126.217	A	20	1.06	3.08	2-1	a^3P-z^3S^o
6085.228	A	20	1.05	3.08	1-1	(69)
6064.631	A	9	1.04	3.08	0-1	
6058.76	P		1.06	3.10	2-2	a^3P-z^5S^o
6018.62	E	(0)	1.05	3.10	1-2	(70)
5918.548	A	10	1.06	3.15	2-2	a^3P-z^3P^o
5903.317	A	5	1.06	3.15	2-1	(71)
5880.306	E	5	1.05	3.15	1-2	
5866.453	A	35	1.06	3.17	2-3	a^3P-y^3D^o
5899.295	A	25	1.05	3.14	1-2	(72)
5932.112	A	18	1.04	3.13	0-1	
5937.806	A	6	1.06	3.14	2-2	
5941.755	A	12	1.05	3.13	1-1	
5980.89	H	(1)	1.06	3.13	2-1	
5814.00	H	(1)	1.06	3.18	2-3	a^3P-y^5D^o
5809.75	H	(0)	1.05	3.17	1-2	(73)
5295.781	A	4	1.06	3.39	2-3	a^3P-x^3D^o
5282.378	B	3	1.05	3.38	1-2	(74)
5284.380	B	2	1.04	3.38	0-1	
5313.239	B	(1)	1.06	3.38	2-2	
5300.012	R	1	1.05	3.38	1-1	
4691.336	A	20	1.06	3.69	2-3	a^3P-w^3D^o
4698.766	A	20	1.05	3.67	1-2	(75)
•4710.186	A	18	1.04	3.66	0-1	
4723.171	B	10	1.06	3.67	2-2	
4722.603	B	10	1.05	3.66	1-1	
4747.256	E	1	1.06	3.66	2-1	
4690.827	B	3	1.06	3.69	2-3	a^3P-x^3G^o (76)
4675.118	A	10	1.06	3.70	2-3	a^3P-x^5D^o
4668.357	E	2	1.05	3.69	1-2	(77)
m4667.53	P	Ti	1.04	3.69	0-1	
4692.45	P		1.06	3.69	2-2	
4679.73	P		1.05	3.69	1-1	
4422.833	A	10	1.06	3.85	2-3	a^3P-v^3D^o
4404.397	B	5	1.05	3.85	1-2	(78)
4394.855	E	(2)	1.04	3.85	0-1	
4425.840	B	3	1.06	3.85	2-2	
4405.694	B	2	1.05	3.85	1-1	
m4427.12	P	Ti	1.06	3.85	2-1	
4308.514	B	2	1.06	3.93	2-2	a^3P-y^3P^o
4302.979	E	1n	1.05	3.92	1-1	(79)
4323.440	B	1	1.06	3.92	2-1	
4310.373	B	1	1.05	3.91	1-0	
•4288.161	B	3	1.05	3.93	1-2	
4292.676	E	1	1.04	3.92	0-1	
4078.471	A	30	1.06	4.09	2-2	a^3P-x^3P^o
4064.203	B	15	1.05	4.09	1-1	(80)
4082.456	A	20	1.06	4.09	2-1	
4065.094	A	15	1.05	4.08	1-0	
4060.263	A	20	1.05	4.09	1-2	
4055.011	A	20	1.04	4.09	0-1	
3989.581	B	(0)	1.06	4.16	2-1	a^3P-z^1P^o
3973.130	E	(0)	1.05	4.16	1-1	(81)
3963.354	E	(0)	1.04	4.16	0-1	
3782.139	F	2	1.06	4.33	2-2	a^3P-x^1D^o
3786.445	B	3	1.05	4.33	1-2	(82)
3725.155	A	20	1.06	4.37	2-1	a^3P-y^3S^o
3709.963	B	20	1.05	4.37	1-1	(83)
3702.291	B	10	1.04	4.37	0-1	
3480.525	A	12	1.06	4.61	2-2	a^3P-w^3P^o
3485.689	E	6	1.05	4.59	1-1	(84)
3499.099	E	8	1.06	4.59	2-1	
3495.754	E	6	1.05	4.58	1-0	
3467.260	E	6	1.05	4.61	1-2	
3478.918	E	6	1.04	4.59	0-1	
3476.452	E	3	1.06	4.61	2-2	a^3P-y^5S^o
3463.305	E	1	1.05	4.61	1-2	(85)
Ti I continued						
3383.312	E	15	1.06	4.71	2-3	a^3P-u^3D^o
3390.682	E	10	1.05	4.69	1-2	(86)
3398.634	E	8	1.04	4.67	0-1	
3403.369	E	4	1.06	4.69	2-2	
3405.094	E	5	1.05	4.67	1-1	
m3417.88	P	Fe	1.06	4.67	2-1	
3314.422	A	10	1.06	4.79	2-3	a^3P-t^3D^o
3309.501	E	15	1.05	4.78	1-2	(87)
3308.391	E	10	1.04	4.77	0-1	
3321.588	E	8	1.06	4.78	2-2	
3314.523	E	8	1.05	4.77	1-1	
3326.639	E	2	1.06	4.77	2-1	
3280.391	E	2	1.06	4.82	2-1	a^3P-x^1P^o
3268.61	E	1	1.05	4.82	1-1	(88)
3262.63	G	1	1.04	4.82	0-1	
•3260.359§	E	3	1.06	4.85	2-1	a^3P-w^1P^o
•3248.602§	E	15	1.05	4.85	1-1	(89)
•3213.145§	E	8	1.06	4.90	2-3	a^3P-s^3D^o
3204.870	E	6	1.05	4.90	1-2	(90)
3201.594	E	5	1.04	4.90	0-1	
3216.203	E	3	1.06	4.90	2-2	
3207.337	E	5	1.05	4.90	1-1	
3218.683	E	tr	1.06	4.90	2-1	
3137.352	E	(1)	1.06	5.00	2-2	a^3P-v^3P^o
3134.654	E	1	1.05	4.99	1-1	(91)
3145.515	E	1	1.06	4.99	2-1	
•3136.028	E	2	1.05	4.98	1-0	
•3100.666	E	12	1.06	5.04	2-3	a^3P-r^3D^o
3106.806	E	8	1.05	5.03	1-2	(92)
3113.482	E	8	1.04	5.01	0-1	
3117.455	E	6	1.06	5.02	2-2	
3117.899	E	5	1.05	5.01	1-1	
•3138.640§	E	8	1.06	5.01	2-1	
•3100.666	E	12	1.06	5.04	2-1	a^3P-x^3S^o
3090.137	E	8	1.05	5.04	1-1	(93)
3084.819	E	4	1.04	5.04	0-1	
2965.707	E	15	1.06	5.22	2-3	a^3P-q^3D^o
2965.231	E	(6?)	1.05	5.21	1-2	(94)
2965.68	E	8	1.04	5.20	0-1	
2974.934	E	4	1.06	5.21	2-2	
2970.556	E	4	1.05	5.20	1-1	
2980.296	E	tr	1.06	5.20	2-1	
10034.45	D	15	1.45	2.68	4-5	b^3F-z^3G^o
10048.78	D	12	1.44	2.67	3-4	(95)
10059.87	D	12	1.42	2.65	2-3	
10189.26	C	3	1.45	2.67	4-4	
10170.60	C	3	1.44	2.65	3-3	
7366.60	E	(1)	1.42	3.10	2-2	b^3F-z^5S^o (96)
7344.72	E	4	1.45	3.13	4-4	b^3F-y^3F^o
7357.74	E	3	1.44	3.11	3-3	(97)
7364.11	E	2	1.42	3.10	2-2	
7423.17	E	(2)	1.44	3.10	3-2	
7371.41	E	(0)	1.44	3.13	3-4	
7399.67	I	(2)	1.42	3.11	2-3	
7316.20	E	5	1.44	3.15	3-2	b^3F-z^3P^o
7160.33	K	(2)	1.42	3.15	2-2	(98)
7138.05	P		1.42	3.15	2-1	
7309.44	E	20	1.45	3.17	4-3	b^3F-y^3D^o
7344.86	E	10	1.44	3.14	3-2	(99)
7251.74	I	8	1.42	3.13	2-1	
7138.91	E	(1) Ti?	1.44	3.17	3-3	
7188.55	E	(0)	1.42	3.14	2-3	
7084.25	P		1.42	3.17	2-3	
7065.15?	J	(1)	1.45	3.20	4-4	b^3F-y^5D^o
7130.34	P		1.45	3.18	4-3	(100)
•7007.81	H	(1)	1.43	3.18	2-3	
6666.548	E	(2n)	1.45	3.31	4-5	b^3F-y^5G^o (101)
6556.066	A	25	1.45	3.34	4-4	b^3F-x^5F^o
6554.236	A	20	1.44	3.32	3-3	(102)
6546.276	A	20	1.42	3.31	2-2	
m6592.91	P	Fe	1.44	3.31	3-2	
6497.689	E	3	1.44	3.34	3-4	
6508.135	E	3	1.42	3.32	2-3	
6366.354	A	8	1.45	3.39	4-3	b^3F-x^3D^o
6336.104	A	8	1.44	3.38	3-2	(103)
6318.027	E	5	1.42	3.38	2-1	
6311.289	E	(1)	1.44	3.39	3-3	
6293.00	P		1.42	3.38	2-2	
6268.50	H	(2)	1.42	3.39	2-3	
6258.706	A	50	1.45	3.43	4-5	b^3F-y^3G^o
6258.103	A	40	1.44	3.41	3-4	(104)
6261.101	A	35	1.42	3.39	2-3	
6312.240	A	10	1.45	3.41	4-4	
6303.754	A	10	1.44	3.39	3-3	
5839.78	P		1.45	3.57	4-5	b^3F-y^5F^o
5906.50	P		1.45	3.54	4-3	(105)
5512.529	A	25	1.45	3.69	4-3	b^3F-w^3D^o
5514.536	B	25	1.44	3.67	3-2	(106)
5514.350	B	20	1.42	3.66	2-1	
5471.198	B	5	1.44	3.69	3-3	
5481.862	B	5	1.42	3.67	2-2	
5449.155	B	1	1.44	3.70	3-3	b^3F-x^5D^o
5440.53	P		1.42	3.69	2-2	(107)
5490.151	A	12	1.45	3.70	4-3	
5472.696	B	2	1.44	3.69	3-2	
Ti I continued						
5474.228	B	6	1.45	3.71	4-5	b^3F-x^3G^o
5453.646	B	3	1.44	3.70	3-4	(108)
5438.310	B	1	1.42	3.69	2-3	
5494.726	B	(1)	1.45	3.70	4-4	
5470.50	J	(2)	1.44	3.69	3-3	
•5511.795	B	2	1.45	3.69	4-3	
5145.465	A	12	1.45	3.85	4-3	b^3F-v^3D^o
5113.448	A	10	1.44	3.85	3-2	(109)
5087.055	A	8	1.42	3.85	2-1	
5109.427	B	4	1.44	3.85	3-3	
5085.333	B	4	1.42	3.85	2-2	
5081.39	P		1.42	3.85	2-3	
5035.908	A	25	1.45	3.90	4-5	b^3F-w^3G^o
5036.468	A	25	1.44	3.89	3-4	(110)
5038.400	A	25	1.42	3.87	2-3	
5071.475	B	7	1.45	3.89	4-4	
5065.985	B	7	1.44	3.87	3-3	
4742.32	P		1.45	4.06	4-3	b^3F-y^1F^o
4711.68	P		1.44	4.06	3-3	(111)
4687.82	P		1.42	4.06	2-3	
4559.920	A	6	1.45	4.16	4-4	b^3F-w^3F^o
4535.87	P		1.44	4.16	3-3	(112)
4518.700	B	8	1.42	4.15	2-2	
4564.316	E	1	1.45	4.16	4-3	
4540.873	E	1	1.44	4.15	3-2	
m4531.60	P	Fe	1.44	4.16	3-4	
4513.715	E	1	1.42	4.16	2-3	
4457.428	A	40	1.45	4.22	4-4	b^3F-v^3F^o
4455.321	A	30	1.44	4.21	3-3	(113)
4453.312	A	30	1.42	4.19	2-2	
4482.688	A	10	1.45	4.21	4-3	
•4474.852	A	8	1.44	4.19	3-2	
4430.366	A	7	1.44	4.22	3-4	
•4434.003	A	15	1.42	4.21	2-3	
4137.09	P		1.45	4.44	4-4	b^3F-y^1G^o (114)
3789.293	B	8	1.45	4.71	4-3	b^3F-u^3D^o
3795.903	B	7	1.44	4.69	3-2	(115)
3798.276	A	6	1.42	4.67	2-1	
3717.259	E	1	1.45	4.77	4-4	b^3F-t^3F^o †
3715.795	E	1	1.44	4.76	3-3	(116)
3713.734	E	1	1.42	4.75	2-2	
3728.676	E	1	1.44	4.75	3-3	
3704.295	B	15	1.45	4.79	4-3	b^3F-t^3D^o
3694.445	A	10	1.44	4.78	3-2	(117)
3685.964	B	2	1.42	4.77	2-1	
3651.90	P		1.45	4.83	4-5	b^3F-x^3H^o
3638.49	P		1.44	4.83	3-4	(118)
3656.73	P		1.45	4.83	4-4	
3487.80	P		1.44	4.98	3-3	b^3F-w^1F^o (119)
3439.305	E	8	1.45	5.04	4-3	b^3F-r^3D^o
3443.644	E	5	1.44	5.03	3-2	(120)
3444.403	E	3	1.42	5.01	2-1	
3423.172	E	2	1.44	5.04	3-3	
3430.874	E	2	1.42	5.03	2-2	
3434.69	P		1.45	5.05	4-4	b^3F-w^1G^o (121)
3297.68	P		1.45	5.20	4-4	b^3F-v^5D^o
3309.32	P		1.45	5.18	4-3	(122)
3274.047	E	(5)	1.45	5.22	4-3	b^3F-q^3D^o
3270.562	E	3	1.44	5.21	3-2	(123)
3265.480	E	2	1.42	5.20	2-1	
3259.42	E	2	1.44	5.22	3-3	
3259.04	G	1	1.42	5.21	2-2	
9718.96	D	25	1.50	2.77	4-3	a^1G-z^1F^o (124)
7949.17	E	(3)	1.50	3.05	4-4	a^1G-z^1G^o (125)
4820.410	A	20	1.50	4.06	4-3	a^1G-y^1F^o (126)
•4526.374	E	1	1.50	4.22	4-4	a^1G-v^3F^o (127)
4437.098	A	40	1.50	4.28	4-5	a^1G-z^1H^o (128)
4186.119	A	25	1.50	4.44	4-4	a^1G-y^1G^o (129)
3919.832	B	5	1.50	4.64	4-3	a^1G-x^1F^o (130)
3724.570	A	20	1.50	4.81	4-4	a^1G-x^1G^o (131)
3702.942	B	2	1.50	4.83	4-4	a^1G-x^3H^o (132)
3547.029	A	15	1.50	4.98	4-3	a^1G-w^1F^o (133)
3456.661	E	6	1.50	5.07	4-5	a^1G-y^1H^o (134)
3431.08	P		1.50	5.09	4-4	a^1G-u^3G^o (135)
3392.713	E	10	1.50	5.13	4-3	a^1G-v^1F^o (136)
3119.725	E	15	1.50	5.45	4-5	a^1G-x^1H^o (137)
9090.70	D	35	1.74	3.10	3-2	a^5P-z^5S^o
9037.32	D	15	1.73	3.10	2-2	(138)
8989.44	D	12	1.73	3.10	1-2	
8831.14	D	12	1.74	3.14	3-2	a^5P-y^3D^o
8761.44	D	15	1.73	3.14	2-2	(139)
8735.76	D	6	1.73	3.14	1-2	
8778.66	D	30	1.74	3.15	3-2	a^5P-z^3P^o
8719.56	D	30	1.73	3.15	2-2	(140)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
8457.10	D	40	1.74	3.20	3-4	a^5P-y^5D^o
8494.42	D	30	1.73	3.18	2-3	(141)
8531.36	D	15	1.73	3.17	1-2	
8550.54	D	25	1.74	3.18	3-3	
8565.45	D	25	1.73	3.17	2-2	
8578.40	D	15	1.73	3.16	1-1	
8612.91	D	7	1.73	3.16	2-1	
*8600.98	D	25	1.73	3.16	1-0	
7474.94	E	(1p?)	1.74	3.39	3-3	a^5P-x^3D^o
7466.44	P		1.73	3.38	2-2	(142)
7431.98	P		1.73	3.39	2-3	
*7253.76	I	(1p?)	1.74	3.44	3-3	a^5P-z^5P^o
7291.03	P		1.73	3.42	2-2	(143)
7305.87	H	(1)	1.73	3.42	1-1	
7332.26	I	(1p?)	1.74	3.42	3-2	
7330.97	I	(1p?)	1.73	3.42	2-1	
7213.35	E	(1)	1.73	3.44	2-3	
7266.29	E	(0)	1.73	3.42	1-2	
6266.021	E	(1)	1.74	3.71	3-4	a^5P-x^5D^o
6264.825	E	(0)	1.73	3.70	2-3	(144)
6277.525	E	(00)	1.73	3.69	1-2	
*6295.251	E	(2)	1.74	3.70	3-3	
6295.949	E	(0)	1.73	3.69	2-2	
6298.075	E	(00)	1.73	3.69	1-1	
4617.269	A	30	1.74	4.41	3-4	a^5P-w^5D^o
4623.098	A	25	1.73	4.40	2-3	(145)
4629.336	A	15	1.73	4.39	1-2	
4639.669	B	15	1.74	4.40	3-3	
4639.369	B	18	1.73	4.39	2-2	
4639.944	B	15	1.73	4.39	1-1	
4656.048	B	6	1.74	4.39	3-2	
4650.016	B	10	1.73	4.39	2-1	
4645.193	A	12	1.73	4.38	1-0	
4481.261	A	30	1.74	4.50	3-3	a^5P-y^5P^o
4480.600	B	5	1.73	4.49	2-2	(146)
4479.724	B	9	1.73	4.48	1-1	
4496.146	A	20	1.74	4.49	3-2	
4489.089	A	20	1.73	4.48	2-1	
4465.807	A	20	1.73	4.50	2-3	
4471.238	A	20	1.73	4.49	1-2	
4305.474	B	2	1.74	4.61	3-2	a^5P-w^3P^o
*4291.214	B	5n	1.73	4.61	2-2	(147)
4299.229	E	15	1.74	4.61	3-2	a^5P-y^5S^o
4284.988	B	8	1.73	4.61	2-2	(148)
4276.441	B	8	1.73	4.61	1-2	
9832.15	D	25	1.88	3.13	5-4	a^3G-y^3F^o
9927.35	D	20	1.87	3.11	4-3	(149)
9997.94	D	15	1.87	3.10	3-2	
9879.41	D	3	1.87	3.11	3-3	
8468.46	D	100	1.88	3.34	5-4	a^3G-x^3F^o
8518.37	D	100	1.87	3.32	4-3	(150)
8548.07	D	100	1.87	3.31	3-2	
8423.10	D	20	1.87	3.34	4-4	
8483.16	D	25	1.87	3.32	3-3	
*7978.88	E	(4)	1.88	3.43	5-5	a^3G-y^3G^o
8024.84	E	(2)	1.87	3.41	4-4	(151)
8068.24	E	(2)	1.87	3.39	3-3	
8066.05	P		1.88	3.41	5-4	
7938.53	P		1.87	3.43	4-5	
6746.433	E	(1)	1.88	3.71	5-5	a^3G-x^3G^o
6748.43	H	(1)	1.87	3.70	4-4	(152)
6751.94	H	(0)	1.87	3.69	3-3	
6092.814	E	4	1.88	3.90	5-5	a^3G-w^3G^o
6121.008	E	3	1.87	3.89	4-4	(153)
6146.225	E	3	1.87	3.87	3-3	
5953.162	A	30	1.88	3.95	5-6	a^3G-z^3H^o
5965.828	A	30	1.87	3.94	4-5	(154)
5978.543	A	25	1.87	3.93	3-4	
5988.560	E	2	1.88	3.94	5-5	
5996.007	E	2	1.87	3.93	4-4	
5409.609	A	6	1.88	4.16	5-4	a^3G-w^3F^o
5397.093	A	4	1.87	4.16	4-3	(155)
5389.996	A	3	1.87	4.15	3-2	
5391.06	P		1.87	4.16	4-4	
5382.96	P		1.87	4.16	3-3	
5265.967	A	10	1.88	4.22	5-4	a^3G-v^3F^o
5283.441	A	8	1.87	4.21	4-3	(156)
5297.236	A	6	1.87	4.19	3-2	
*5248.402	E	(1)	1.87	4.22	4-4	
5269.93	H	(1)	1.87	4.21	3-3	
4885.082	A	20	1.88	4.41	5-6	a^3G-y^3H^o
4899.910	A	20	1.87	4.39	4-5	(157)
4913.616	A	20	1.87	4.38	3-4	
4915.236	B	5	1.88	4.39	5-5	
4925.396	B	5	1.87	4.38	4-4	
4811.074	B	4	1.88	4.44	5-4	a^3G-y^1G^o (158)
4449.985	B	1	1.87	4.64	4-3	a^3G-x^1F^o
4440.345	A	10	1.87	4.64	3-3	(159)
4449.143	A	30	1.88	4.65	5-5	a^3G-v^3G^o
4450.896	A	25	1.87	4.64	4-4	(160)
4453.708	A	20	1.87	4.64	3-3	
4463.539	B	8	1.88	4.64	5-4	
4463.391	B	8	1.87	4.64	4-3	
4436.586	A	4	1.87	4.65	4-5	
4441.272	B	4	1.87	4.64	3-4	
4417.274	A	15	1.88	4.67	5-4	a^3G-u^3F^o
4426.054	A	10	1.87	4.66	4-3	(161)
*4434.003	A	15	1.87	4.65	3-2	
4404.911	B	5	1.87	4.67	4-4	
4416.535	B	4	1.87	4.66	3-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
4263.134	A	15	1.88	4.77	5-4	a^3G-t^3F^o
*4274.584	A	15	1.87	4.76	4-3	(162)
4282.703	A	12	1.87	4.75	3-2	
4251.618	B	3	1.87	4.77	4-4	
4265.723	B	4	1.87	4.76	3-3	
4169.330	B	7	1.88	4.84	5-6	a^3G-x^3H^o
4166.311	B	6	1.87	4.83	4-5	(163)
4164.134	B	4	1.87	4.83	3-4	
4177.357	E	(2)	1.88	4.83	5-5	
4173.609	E	(2)	1.87	4.83	4-4	
3895.59	P		1.88	5.05	5-4	a^3G-w^1G^o
3885.95	P		1.87	5.05	4-4	(164)
3878.61	P		1.87	5.05	3-4	
3786.253	B	3	1.88	5.14	5-4	a^3G-s^3F^o
3801.093	B	3	1.87	5.12	4-3	(165)
3811.385	B	4	1.87	5.10	3-2	
3733.767	B	4n	1.88	5.18	5-6	a^3G-w^3H^o †
3738.901	E	5n	1.87	5.17	4-5	(166)
3748.101	B	6n	1.87	5.16	3-4	
3504.773	E	2	1.88	5.40	5-4	a^3G-r^3F^o
3516.838	E	3	1.87	5.38	4-3	(167)
3525.161	E	3	1.87	5.37	3-2	
3428.955	E	4	1.88	5.48	5-5	a^3G-t^3G^o
3446.603	E	2	1.87	5.45	4-4	(168)
*3454.165	E	1	1.88	5.45	5-4	
3352.43	P		1.88	5.56	5-4	a^3G-q^3F^o
3358.56	P		1.87	5.55	4-3	(169)
3364.10	P		1.87	5.53	3-2	
3010.42	P		1.87	5.97	4-3	a^3G-u^1F^o (170)
*5054.070	B	3	1.87	4.31	0-1	a^1S-y^1P^o (171)
3601.16	J	1	1.87	5.30	0-1	a^1S-v^1P^o (173)
5035.570	A	18	2.03	4.49	6-5	z^5G^o-e^5F
5013.384	B	18	2.01	4.47	5-4	(173)
5000.991	B	10	1.99	4.46	4-3	
4989.140	B	10	1.97	4.45	3-2	
4978.191	A	10	1.96	4.44	2-1	
4977.731	B	5	2.01	4.49	5-5	
4973.051	B	6	1.99	4.47	4-4	
4968.566	B	6	1.97	4.46	3-3	
4964.713	B	5	1.96	4.45	2-2	
4938.04	H	(0n)	1.99	4.49	4-5	
4941.015	E	(1)	1.97	4.47	3-4	
4944.388	E	(0)	1.96	4.46	2-3	
4355.308	E	1	2.03	4.87	6-5	z^5G^o-f^5F
4340.018	E	1	2.01	4.85	5-4	(174)
3911.185	B	8n	2.03	5.19	6-6	z^5G^o-e^5G
*3899.668	B	(2)	2.01	5.17	5-5	(175)
3888.030	B	4n	1.99	5.16	4-4	
3877.591	B	2n	1.97	5.15	3-3	
3869.375	B	5n	1.96	5.15	2-2	
3928.97	P		2.03	5.17	6-5	
3912.589	B	2	2.01	5.16	5-4	
3897.390	B	1	1.99	5.15	4-3	
3884.090	B	(0)	1.97	5.15	3-2	
3882.147	B	15n	2.01	5.19	5-6	
*3875.262	A	20n	1.99	5.17	4-5	
3868.397	B	10n	1.97	5.16	3-4	
3862.833	B	10n	1.96	5.15	2-3	
3883.892	B	20n	2.03	5.21	6-7	z^5G^o-e^5H
3866.446	A	15n	2.01	5.20	5-6	(176) *
3858.133	B	15n	1.99	5.19	4-5	
3853.719	B	10n	1.97	5.17	3-4	
3853.038	B	10n	1.96	5.16	2-3	
3895.243	A	30n	2.03	5.20	6-6	
3882.313	B	10n	2.01	5.19	5-5	
3873.203	B	10n	1.99	5.17	4-4	
3867.739	B	3	1.97	5.16	3-3	
3911.362	E	(2)	2.03	5.19	6-5	
3897.581	B	1	2.01	5.17	5-4	
3887.365	E	(1n)	1.99	5.16	4-3	
3730.384	E	2	2.03	5.35	6-5	z^5G^o-g^5F
3707.549	B	10n	2.01	5.34	5-4	(177)
3696.885	E	2	1.99	5.33	4-3	
3688.27	P		1.97	5.32	3-2	
3681.373	E	1	1.96	5.31	2-1	
3694.10	P		2.01	5.35	5-5	
3685.47	P		1.99	5.34	4-4	
3679.14	P		1.97	5.33	3-3	
3674.92	P		1.96	5.32	2-2	
*3366.176§	E	5	2.03	5.70	6-5	z^5G^o-h^5F
3361.50	G	1	2.01	5.68	5-4	(178)
3356.196	E	2	1.99	5.67	4-3	
*3350.548§	E	2	1.97	5.66	3-2	
3344.931	E	1	1.96	5.65	2-1	
3344.630	E	tr	2.01	5.70	5-5	
3343.379	E	tr	1.99	5.68	4-4	
*3341.554	E	1	1.97	5.67	3-3	
3339.54	E	1n	1.96	5.66	2-2	
3226.128	E	12	2.03	5.86	6-6	z^5G^o-g^5G
3223.519	E	10	2.01	5.84	5-5	(179)
3231.381	E	10	1.99	5.82	4-4	
3219.212	E	8	1.97	5.81	3-3	
3217.942	E	8	1.96	5.80	2-2	
3243.513	E	3	2.03	5.84	6-5	
3238.224	E	4	2.01	5.82	5-4	
3233.791	E	3	1.99	5.81	4-3	
3228.183	E	2	1.97	5.80	3-2	
3206.344	E	5	2.01	5.86	5-6	
3206.825	E	5	1.99	5.84	4-5	
3207.897	E	5	1.97	5.82	3-4	
3209.030	E	4	1.96	5.81	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
3143.350	E	12N	2.03	5.96	6-7	z^5G^o-g^5H
3139.87	E	10N	2.01	5.94	5-6	(180)
3135.069	E	8N	1.99	5.92	4-5	
3130.175	E	8N	1.97	5.91	3-4	
3127.684	E	8N	1.96	5.91	2-3	
3133.769	E	20n	2.03	5.98	6-5	z^5G^o-j^5F
3118.130	E	15	2.01	5.97	5-4	(181)
3114.092	E	20n	1.99	5.95	4-3	
3111.383	E	10n	1.97	5.94	3-2	
3107.468	E	12n	1.96	5.93	2-1	
3105.330	E	2n	2.01	5.98	5-5	
3102.517	E	3n	1.99	5.97	4-4	
3101.526	E	4n	1.97	5.95	3-3	
3101.77	G	1n	1.96	5.94	2-2	
8518.05	D	60	2.13	3.57	5-4	z^5F^o-a^5D
8467.15	D	75	2.11	3.57	4-3	(182)
8424.41	D	50	2.09	3.56	3-2	
8389.48	D	25	2.08	3.55	2-1	
8417.54	D	25	2.11	3.57	4-4	
8386.34	P		2.09	3.57	3-3	
8363.58	P		2.08	3.56	2-2	
5234.301	A	15	2.13	4.49	5-5	z^5F^o-e^5F
5234.938	A	8	2.11	4.47	4-4	(183)
5234.558	B	6	2.09	4.46	3-3	
5233.623	B	6	2.08	4.45	2-2	
5232.685	B	6	2.08	4.44	1-1	
5263.483	B	3	2.13	4.47	5-4	
5255.811	B	5	2.11	4.46	4-3	
5247.293	B	5	2.09	4.45	3-2	
*5238.560	B	6	2.08	4.44	2-1	
5186.329	B	3	2.11	4.49	4-5	
5194.043	E	4	2.09	4.47	3-4	
5201.096	E	4	2.08	4.46	2-3	
5207.852	B	3	2.08	4.45	1-2	
4503.762	A	4n	2.13	4.87	5-5	z^5F^o-f^5F
4497.709	B	3	2.11	4.85	4-4	(184)
4492.540	B	3	2.09	4.84	3-3	
m4488.37	P	Ti+	2.08	4.83	2-2	
4485.013	B	1	2.08	4.83	1-1	
*4536.374	E	1	2.13	4.85	5-4	
4515.610	B	1	2.11	4.84	4-3	
4505.715	E	1	2.09	4.83	3-2	
4496.75	P		2.08	4.83	2-1	
4475.518	E	1	2.11	4.87	4-5	
*4474.852	A	8	2.09	4.85	3-4	
4475.19	P		2.08	4.84	2-3	
4476.61	P		2.08	4.83	1-2	
4030.512	A	25n	2.13	5.19	5-6	z^5F^o-e^5G
4026.539	A	25n	2.11	5.17	4-5	(185)
4021.812	B	25n	2.09	5.16	3-4	
4017.771	A	15n	2.08	5.15	2-3	
4015.377	A	12n	2.08	5.15	1-2	
4049.399	E	2n	2.13	5.17	5-5	
4040.310	B	4n	2.11	5.16	4-4	
4031.753	B	3n	2.09	5.15	3-3	
4016.264	B	6	2.13	5.20	5-4	z^5F^o-g^3F
4012.786	B	3	2.11	5.18	4-3	(186)
4013.24	P		2.09	5.17	3-2	
3993.796	B	1	2.11	5.20	4-4	
3994.56	P		2.09	5.18	3-3	
3975.69	P		2.09	5.20	3-4	
3980.821	B	(0)	2.08	5.18	2-3	
4013.587	A	12n	2.13	5.20	5-6	z^5F^o-e^5H
4008.046	B	9n	2.11	5.19	4-5	(187)
4005.952	B	6n	2.09	5.17	3-4	
4007.195	B	3n	2.08	5.16	2-3	
4003.789	B	10n	2.13	5.21	5-4	z^5F^o-e^5D
4002.466	B	9n	2.11	5.19	4-3	(188)
3999.336	B	7n	2.09	5.18	3-2	
3994.683	B	4n	2.08	5.17	2-1	
3990.184	E	(1n)	2.08	5.17	1-0	
3981.466	B	(0)	2.11	5.21	4-4	
3984.313	B	3	2.09	5.19	3-3	
3985.580	B	(1)	2.08	5.18	2-2	
3828.180	B	3	2.13	5.35	5-5	z^5F^o-g^5F †
3822.026	B	(2)	2.11	5.34	4-4	(189)
3817.639	B	5	2.09	5.33	3-3	
3814.855	B	4	2.08	5.32	2-2	
3813.261	B	(0)	2.08	5.31	1-1	
3306.879	E	10	2.13	5.86	5-6	z^5F^o-g^5G
3309.730	E	6	2.11	5.84	4-5	(190)
3312.690	E	5	2.09	5.82	3-4	
3315.237	E	2	2.08	5.81	2-3	
3318.362	E	4	2.08	5.80	1-2	
3325.155	E	3	2.13	5.84	5-5	
3325.239	E	3	2.11	5.82	4-4	
*3324.754	E	4	2.08	5.80	(3-3 2-2	
3340.77	H	(1)	2.13	5.82	5-4	
3337.40	G	1n	2.11	5.81	4-3	
3334.35	H	(1n)	2.09	5.80	3-2	
3199.43	G	1n	2.13	5.98	5-5	z^5F^o-j^5F
3198.726	E	1n	2.11	5.97	4-4	(191)
3199.34	H	(1n)	2.09	5.95	3-3	
*3213.145§	E	8	2.13	5.97	5-4	
3211.07	E	1n	2.11	5.95	4-3	
3141.670	E	10	2.13	6.05	5-4	z^5F^o-h^5D †
3139.075	E	7	2.11	6.05	4-3	(192)
*3138.640§	E	8	2.09	6.04	3-2	
3135.656	E	(2)	2.08	6.03	2-1	
3135.553	E	2	2.08	6.02	1-0	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
10057.69	D	25	2.17	3.39	3-3	a^3D-x^3D^o
10003.03	D	25	2.15	3.38	2-2	(193)
10011.72	D	15	2.14	3.38	1-1	
10120.90	C	10	2.17	3.38	3-2	
10066.47	D	8	2.15	3.38	2-1	
9941.33	D	8	2.15	3.39	2-3	
9948.98	D	8	2.14	3.38	1-2	
9661.42	D	10	2.17	3.44	3-3	a^3D-z^5P^o
9690.62	D	2	2.15	3.42	2-2	(194)
8080.55	P		2.17	3.69	3-3	a^3D-w^3D^o
8098.50	P		2.15	3.67	2-2	(195)
8133.36	P		2.14	3.66	1-1	
6419.15	H	(2)	2.17	4.09	3-2	a^3D-x^3P^o †
6381.416	E	(1)	2.15	4.09	2-1	(196)
6361.41	H	(1)	2.14	4.08	1-0	
6186.14	J	3	2.17	4.16	3-4	a^3D-w^3F^o †
6149.743	E	2	2.15	4.16	2-3	(197)
6138.38	I	1	2.14	4.15	1-2	
5999.003	F	4n	2.17	4.22	3-4	a^3D-v^3F^o
6002.640	E	(0)	2.15	4.21	2-3	(198)
6018.423	L	(1)	2.14	4.19	1-2	
5052.879	A	8	2.17	4.61	3-2	a^3D-w^3P^o
5062.112	A	7	2.15	4.59	2-1	(199)
5069.351	B	5	2.14	4.58	1-0	
5023.39	H	(2)	2.15	4.61	2-2	
5048.208	E	(1)	2.14	4.59	1-1	
4921.768	A	12	2.17	4.67	3-4	a^3D-u^3F^o
4919.867	A	10	2.15	4.66	2-3	(200)
4928.342	A	12	2.14	4.65	1-2	
4948.183	B	3	2.17	4.66	3-3	
4941.562	B	3	2.15	4.65	2-2	
4848.487	B	8	2.17	4.71	3-3	a^3D-u^3D^o
4864.187	B	4	2.15	4.69	2-2	(201)
4880.922	B	3	2.14	4.67	1-1	
4891.828	B	1	2.17	4.69	3-2	
4893.90	H	(1)	2.15	4.67	2-1	
4821.29	H	(1p?)	2.15	4.71	2-3	
4731.172	A	9	2.17	4.77	3-4	a^3D-t^3F^o
4733.426	B	6	2.15	4.76	2-3	(202)
4742.139	B	3	2.14	4.75	1-2	
4759.74	H	(1p?)	2.17	4.76	3-3	
4754.38	H	(1p?)	2.15	4.75	2-2	
•4710.186	A	18	2.17	4.79	3-3	a^3D-t^3D^o
4698.86	P	(6?)	2.15	4.78	2-2	(203)
4696.923	B	4	2.14	4.77	1-1	
4724.679	E	(2)	2.17	4.78	3-2	
4708.976	E	1	2.15	4.77	2-1	
4684.484	E	2	2.15	4.79	2-3	
4686.921	E	4	2.14	4.78	1-2	
4360.487	A	4	2.17	5.00	3-2	a^3D-v^3P^o
4354.064	B	3	2.15	4.99	2-1	(204)
4346.610	E	1	2.14	4.98	1-0	
4338.476	B	1	2.15	5.00	2-2	
4343.798	B	1	2.14	4.99	1-1	
4289.919	B	3	2.17	5.04	3-3	a^3D-r^3D^o
m4300.52	P	T1	2.15	5.03	2-2	(205)
4311.654	B	2	2.14	5.01	1-1	
4150.963	A	10	2.17	5.14	3-4	a^3D-s^3F^o
4159.634	A	9	2.15	5.12	2-3	(206)
4171.018	B	8	2.14	5.10	1-2	
4179.860	B	(00)	2.17	5.12	3-3	
4180.498	B	(00)	2.15	5.10	2-2	
4099.166	A	8	2.17	5.18	3-2	a^3D-u^3P^o
4077.148	B	4	2.15	5.18	2-1	(207)
4065.595	B	(0)	2.14	5.18	1-0	
4079.708	B	6	2.15	5.18	2-2	
4068.144	E	3	2.14	5.18	1-1	
4035.828	A	10	2.17	5.22	3-3	a^3D-q^3D^o
4033.883	B	6	2.15	5.21	2-2	(208)
4034.884	B	5	2.14	5.20	1-1	
4052.930	B	2	2.17	5.21	3-2	
4043.775	E	2	2.15	5.20	2-1	
4016.943	B	3	2.15	5.22	2-3	
m4035.07	P	T1+	2.14	5.21	1-2	
•8496.03	D	60	2.24	3.69	3-3	b^3P-w^3P^o
8539.36	D	60	2.23	3.67	1-2	(209)
8569.72	D	50	2.22	3.66	0-1	
•8600.98	D	25	2.24	3.67	2-2	
8618.44	D	20	2.23	3.66	1-1	
8442.98	D	20	2.24	3.70	2-3	b^3P-x^5D^o
8495.51	D	15	2.23	3.68	1-0?	(210)
7654.44	E	(2)	2.24	3.85	2-3	b^3P-v^3P^o †
7614.50	E	(1p?)	2.23	3.85	1-2	(211)
7580.55	H	(1)	2.22	3.85	0-1	
7318.39	E	(2)	2.24	3.93	2-2	b^3P-y^3P^o
7361.56	P		2.24	3.92	2-1	(212)
7337.78	P		2.23	3.91	1-0	
7373.77	E	(0)	2.23	3.93	1-2	
6678.60	P		2.24	4.09	2-2	b^3P-x^3P^o (213)
5780.778	B	2	2.24	4.37	2-1	b^3P-y^3S^o
5752.89	I	1	2.23	4.37	1-1	(214)
5212.371	B	3	2.24	4.61	2-2	b^3P-w^3P^o
5230.967	B	(0)	2.23	4.59	1-1	(215)
5189.61	P		2.23	4.61	1-2	
5212.997	B	(0)	2.22	4.59	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
4995.062	B	(0)	2.24	4.71	2-3	b^3P-u^3D^o (216)
4848.41	P		2.24	4.79	2-3	b^3P-t^3D^o
4843.989	B	2	2.23	4.78	1-2	(217)
4839.251	E	(1)	2.22	4.77	0-1	
4863.75	P		2.24	4.78	2-2	
4854.727	B	(00)	2.23	4.77	1-1	
•4404.276	B	10	2.24	5.04	2-3	b^3P-r^3D^o
4421.754	A	6	2.23	5.02	1-2	(218)
4431.284	B	4	2.22	5.01	0-1	
4438.232	B	2	2.24	5.02	2-2	
4444.267	B	(1)	2.23	5.01	1-1	
•4404.276	B	10	2.24	5.04	2-1	b^3P-x^3S^o
4388.077	B	3	2.23	5.04	1-1	(219)
4375.425	E	1	2.22	5.04	0-1	
4303.465	B	8	2.24	5.18	2-2	b^3P-u^3P^o
4186.01	P		2.23	5.18	1-1	(220)
4200.752	B	6	2.24	5.18	2-1	
4183.294	B	4	2.23	5.18	1-0	
4188.694	B	5	2.23	5.18	1-2	
4174.472	B	3	2.22	5.18	0-1	
4136.894	B	(1)	2.24	5.22	2-3	b^3P-q^3D^o
4140.43	P		2.23	5.21	1-2	(221)
4139.48	H	(1)	2.22	5.20	0-1	
4154.865	E	2	2.24	5.21	2-2	
4150.809	B	(0)	2.23	5.20	1-1	
3698.183	E	3	2.24	5.58	2-2	b^3P-t^3P^o
3710.186	E	(0)	2.24	5.57	2-1	(222)
3705.53	J	(1)	2.23	5.56	1-0	
3686.71	H	(0)	2.23	5.58	1-2	
3689.671	E	(0)	2.22	5.57	0-1	
10460.07	C	10	2.25	3.43	6-5	a^3H-y^3G^o
10553.02	C	8	2.24	3.41	5-4	(223)
10565.97	C	5	2.23	3.39	4-3	
8438.93	D	75	2.25	3.71	6-5	a^3H-x^3G^o
8450.89	D	75	2.24	3.70	5-4	(224)
8416.97	D	60	2.23	3.69	4-3	
8402.54	D	5	2.24	3.71	5-5	
7440.60	E	(3)	2.25	3.90	6-5	a^3H-w^3G^o
7489.61	E	(2)	2.24	3.89	5-4	(225)
7496.12	E	(2)	2.23	3.87	4-3	
6745.56	P		2.23	4.06	4-3	a^3H-y^1F^o (226)
5999.668	A	8	2.23	4.28	4-5	a^3H-z^1H^o (227)
5715.123	A	9	2.25	4.41	6-6	a^3H-y^3H^o
5739.464	A	9	2.24	4.39	5-5	(228)
5739.975	B	4	2.23	4.38	4-4	
5756.45	P		2.25	4.39	6-5	
5597.92	I	(2n)	2.24	4.44	5-4	a^3H-y^1G^o
5565.476	A	9	2.23	4.44	4-4	(229)
5127.367	E	(1)	2.25	4.65	6-5	a^3H-v^3G^o
5132.931	B	(0)	2.24	4.64	5-4	(230)
5122.082	B	(00)	2.23	4.64	4-3	
4856.012	A	20	2.25	4.79	6-7	a^3H-z^3I^o
4870.129	A	20	2.24	4.77	5-6	(231)
4868.264	A	18	2.23	4.76	4-5	
4882.326	B	2	2.25	4.77	6-6	
4893.065	B	2	2.24	4.76	5-5	
4778.259	A	10	2.23	4.81	4-4	a^3H-x^1G^o (232)
4759.272	A	25	2.25	4.84	6-6	a^3H-x^3H^o
4758.120	A	25	2.24	4.83	5-5	(233)
4742.791	A	20	2.23	4.83	4-4	
4769.775	B	4	2.25	4.83	6-5	
4766.330	B	4	2.24	4.83	5-4	
4747.680	B	3	2.24	4.84	5-6	
4734.682	B	3	2.23	4.83	4-5	
4346.104	A	5	2.23	5.07	4-5	a^3H-y^1H^o (234)
4318.631	A	10n	2.25	5.10	6-5	a^3H-u^3G^o
4325.134	A	9n	2.24	5.09	5-4	(235)
4321.655	A	8n	2.23	5.08	4-3	
4309.071	B	1	2.24	6.10	5-5	
8598.18	D	60	2.26	3.69	4-3	b^1G-x^3G^o (236)
6861.47	E	6	2.26	4.06	4-3	b^1G-y^1F^o (237)
6091.175	A	20	2.26	4.28	4-5	b^1G-z^1H^o (238)
5823.679	B	3	2.26	4.38	4-4	b^1G-y^3H^o (239)
5644.137	A	18	2.26	4.44	4-4	b^1G-y^1G^o (240)
4836.125	B	6	2.26	4.81	4-4	b^1G-x^1G^o (241)
4799.797	A	12	2.26	4.83	4-4	b^1G-x^3H^o (242)
4424.401	B	2	2.26	5.05	4-4	b^1G-w^1G^o (243)
4393.925	A	8	2.26	5.07	4-5	b^1G-y^1H^o (244)
4368.941	B	2	2.26	5.08	4-3	b^1G-u^3G^o (245)
3938.005	B	2n	2.26	5.39	4-4	b^1G-v^1G^o (246)
3574.245	E	8	2.26	5.71	4-4	b^1G-u^1G^o (247)
9746.86	D	15	2.31	3.57	4-4	z^5D^o-a^5D†
9717.00	D	10	2.30	3.57	3-3	(248)
9702.86	D	3	2.29	3.56	2-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
5662.154	A	12	2.31	4.49	4-5	z^5D^o-e^5F
5675.413	A	9	2.30	4.47	3-4	(249)
5689.465	A	10	2.29	4.46	2-3	
5702.666	B	6	2.28	4.45	1-2	
5713.895	B	3	2.28	4.44	0-1	
5708.199	B	3	2.31	4.47	4-4	
5711.852	B	4	2.30	4.46	3-3	
5716.450	B	4	2.29	4.45	2-2	
5720.445	B	3	2.28	4.44	1-1	
5739.08	P		2.30	4.45	3-2	
4825.445	B	3	2.31	4.87	4-5	z^5D^o-f^5F
4827.597	F	2	2.30	4.85	3-4	(250)
4832.065	B	(0)	2.29	4.84	2-3	
4837.42	P		2.28	4.83	1-2	
4270.139	B	7n	2.31	5.20	4-4	z^5D^o-g^3F
4273.312	B	2	2.30	5.18	3-3	(251)
4291.88	J	(1)	2.31	5.18	4-3	
4251.769	B	2n	2.30	5.20	3-4	
4260.738	B	2	2.29	5.18	2-3	
4256.025	A	8n	2.31	5.21	4-4	z^5D^o-e^5D
4261.609	B	5n	2.30	5.19	3-3	(252)
4266.227	B	3n	2.29	5.18	2-2	
4268.928	E	(1n)	2.28	5.17	1-1	
4280.069	B	2n	2.31	5.19	4-3	
4278.829	B	3n	2.30	5.18	3-2	
4276.657	B	2	2.29	5.17	2-1	
4274.408	B	(0)	2.28	5.17	1-0	
4237.786	B	(0)	2.30	5.21	3-4	
4249.114	A	5n	2.29	5.19	2-3	
4258.523	A	4n	2.28	5.18	1-2	
4265.273	B	3n	2.28	5.17	0-1	
4137.284	A	10n	2.31	5.29	4-3	z^5D^o-e^5P †
4143.048	B	7n	2.30	5.27	3-2	(253)
4150.557	B	3	2.29	5.26	2-1	
4130.037	B	2	2.30	5.29	3-3	
4131.244	B	4	2.29	5.27	2-2	
4143.280	B	3	2.28	5.26	1-1	
4058.139	A	7	2.31	5.35	4-5	z^5D^o-g^5F
4057.612	B	5	2.30	5.34	3-4	(254)
4060.09	P		2.29	5.33	2-3	
m4064.22	P	T1	2.28	5.32	1-2	
4068.661	E	(1)	2.28	5.31	0-1	
4074.356	B	3	2.31	5.34	4-4	
4071.469	E	2	2.30	5.33	3-3	
4071.211	E	2	2.29	5.32	2-2	
3323.896	E	2	2.31	6.02	4-5	z^5D^o-k^5F †
3323.660	E	2n	2.30	6.01	3-4	(255)
3325.365	E	1n	2.29	6.00	2-3	
3328.326	E	1	2.28	5.99	1-2	
7038.80	E	6	2.33	4.09	2-2	c^3P-x^3P^o
7008.35	E	(1)	2.32	4.09	1-1	(256)
7050.65	E	(1)	2.33	4.09	2-1	
7010.94	I	(1)	2.32	4.08	1-0	
6996.63	E	(1)	2.32	4.09	1-2	
7004.60	J	(1)	2.32	4.09	0-1	
6017.52	P		2.32	4.37	1-1	c^3P-y^3S^o (257)
5419.189	B	1	2.33	4.61	2-2	c^3P-y^5S^o (258)
5429.139	A	6	2.33	4.61	2-2	c^3P-w^3P^o
5448.882	B	(0)	2.32	4.59	1-1	(259)
5474.449	B	(1)	2.33	4.59	2-1	
5473.517	B	(1)	2.32	4.58	1-0	
5404.023	E	2	2.32	4.61	1-2	
•5446.593	B	2	2.32	4.59	0-1	
4805.416	A	12	2.33	4.90	2-3	c^3P-s^3D^o
4792.482	A	10	2.32	4.90	1-2	(260)
4796.210	B	6	2.32	4.90	0-1	
4812.240	B	5	2.33	4.90	2-2	
4797.983	B	5	2.32	4.90	1-1	
4637.887	B	8	2.33	5.00	2-2	c^3P-v^3P^o
4637.209	E	2	2.32	4.99	1-1	(261)
4655.712	B	3	2.33	4.99	2-1	
4640.431	E	2	2.32	4.98	1-0	
4619.525	E	3	2.32	5.00	1-2	
4635.539	E	3	2.32	4.99	0-1	
•4558.092	B	2	2.33	5.04	2-3	c^3P-r^3D^o
4576.551	E	(0)	2.32	5.03	1-2	(262)
4598.99	P		2.32	5.01	0-1	
4594.51	P		2.33	5.02	2-2	
•4558.092	B	2	2.33	5.04	2-1	c^3P-x^3S^o (263)
6012.53	H	(1)	2.42	4.47	4-5	z^3F^o-b^3G
5982.52	H	(0)	2.40	4.46	3-4	(264)
5971.07	H	(0)	2.39	4.45	2-3	
5477.695	A	8	2.42	4.67	4-4	z^3F^o-e^3F
5481.426	A	6	2.40	4.65	3-3	(265)
5488.210	A	5	2.39	4.63	2-3	
5527.606	B	(1)	2.42	4.65	4-3	
5518.11	P		2.40	4.63	3-2	
5432.318	B	(0)	2.40	4.67	3-4	
5451.965	B	(1)	2.39	4.65	2-3	
4563.427	B	5	2.42	5.12	4-5	z^3F^o-e^3G
4555.069	B	3	2.40	5.11	3-4	(266)
4570.906	B	3n	2.39	5.09	2-3	
4586.95	P		2.42	5.11	4-4	
4436.64	H	(1)	2.42	5.20	4-4	z^3F^o-g^3F
4430.033	B	3	2.40	5.18	3-3	(267)
4433.578	B	3	2.39	5.17	2-2	
3708.625	B	4n	2.42	5.74	4-4	z^3F^o-h^3F (268)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
5648.570	A	5	2.48	4.67	3-4	z^3D^o-e^3F
5662.891	B	4	2.47	4.65	2-3	(269)
5679.908	B	2	2.46	4.63	1-2	
4548.094	B	2	2.48	5.30	3-4	z^3D^o-g^3F
4547.850	E	2	2.47	5.18	2-3	(270)
4557.857	B	2	2.46	5.17	1-2	
3481.675	E	3	2.48	6.03	3-3	z^3D^o-e^3D
3481.126	E	3	2.47	6.02	2-2	(271)
3472.793	E	2	2.46	6.02	1-1	
7352.16	E	(1)	2.48	4.16	1-1	a^1P-z^1P^o (272)
6716.679	E	(1)	2.48	4.31	1-1	a^1P-y^1P^o (273)
6677.25	J	(0)	2.48	4.33	1-2	a^1P-x^1D^o (274)
*5511.795	B	2	2.48	4.72	1-0	a^1P-z^1S^o (275)
5206.059	B	5	2.48	4.85	1-1	a^1P-w^1P^o (276)
4372.383	A	3	2.48	5.30	1-1	a^1P-v^1P^o (277)
4237.654	B	5	2.48	5.40	1-2	a^1P-w^1D^o (278)
4211.729	B	4	2.48	5.41	1-2	a^1P-y^1D^o (279)
5741.192	B	1	2.49	4.64	2-3	b^1D-x^1F^o (280)
5298.429	A	4	2.49	4.82	2-1	b^1D-x^1P^o (281)
5246.143	B	2	2.49	4.85	2-1	b^1D-w^1P^o (282)
4975.344	A	10	2.49	4.98	2-3	b^1D-w^1F^o (283)
4237.889	A	7	2.49	5.41	2-2	b^1D-v^1D^o (284)
7189.89	E	2	2.57	4.28	5-5	a^1H-z^1H^o (285)
6575.180	E	3	2.57	4.44	5-4	a^1H-y^1G^o (286)
5503.897	A	8	2.57	4.81	5-4	a^1H-x^1G^o (287)
5120.420	A	12	2.57	4.98	5-6	a^1H-z^1I^o (288)
4938.283	A	8	2.57	5.07	5-5	a^1H-y^1H^o (289)
4369.682	A	5n	2.57	5.39	5-4	a^1H-v^1G^o (290)
4278.231	B	7	2.57	5.45	5-5	a^1H-x^1H^o (291)
3926.319	B	10	2.57	5.71	5-4	a^1H-u^1G^o (292)
6215.212	B	20	2.68	4.67	5-4	z^3G^o-e^3F
6220.460	B	12	2.67	4.65	4-3	(293)
6221.41	E	8	2.65	4.63	3-2	
5064.068	B	4	2.68	5.12	5-5	z^3G^o-e^3G
*5054.070	B	3	2.67	5.11	4-4	(294)
5068.332	B	3	2.65	5.09	3-3	
4908.46	P		2.68	5.30	5-4	z^3G^o-g^3F
4900.625	E	(7)	2.67	5.18	4-3	(295)
4900.03	P		2.65	5.17	3-2	
4127.531	A	15	2.68	5.67	5-6	z^3G^o-f^3H
4123.559	B	10	2.67	5.66	4-5	(296)
4122.143	A	10	2.65	5.64	3-4	
4149.445	B	(0)	2.68	5.66	5-5	
4142.480	B	2	2.67	5.64	4-4	
4032.628	B	3n	2.68	5.74	5-4	z^3G^o-h^3F (297)
5259.976	B	3	2.73	5.07	2-3	z^1D^o-e^1F (298)
4068.981	B	4n	2.73	5.76	2-3	z^1D^o-f^1F (299)
5351.072	B	4	2.77	5.07	3-3	z^1F^o-e^1F (300)
4224.795	B	5	2.77	5.69	3-4	z^1F^o-e^1G (301)
4123.287	B	5n	2.77	5.76	3-3	z^1F^o-f^1F (302)
3606.062	E	1	2.77	6.19	3-2	z^1F^o-f^1D (303)
6098.655	B	7	3.05	5.07	4-3	z^1G^o-e^1F (304)
4808.531	B	5	3.05	5.62	4-5	z^1G^o-e^1H (305)
4688.392	B	3	3.08	5.71	1-2	z^3S^o-e^3P (306)
7069.11	I	2	3.17	4.91	3-4	y^3D^o-f^3F
7039.36	E	(1)	3.14	4.89	2-3	(307)
7035.86	E	(2)	3.13	4.88	1-2	
7996.53	E	(3)	3.32	4.87	6-5	y^5G^o-f^5F
*7978.88	E	(4)	3.31	4.85	5-4	(308)
7961.58	E	(2)	3.29	4.84	4-3	
7943.93	E	(1n†)	3.28	4.83	3-2	
7936.37	E	(1)	3.27	4.83	2-1	
7909.34	P		3.30	4.87	5-5	
5804.265	A	5n	3.32	5.45	6-7	y^5G^o-f^5H
5785.979	A	5n	3.31	5.44	5-6	(309)
5774.037	A	5n	3.29	5.43	4-5	
5766.330	A	4n	3.28	5.42	3-4	
5763.295	B	4n	3.27	5.41	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
5832.47	H	(1)	3.32	5.44	6-6	y^5G^o-f^5H
5812.827	B	(1)	3.31	5.43	5-5	cont
5797.445	B	(1)	3.29	5.42	4-4	
5785.67	E	(1)	3.28	5.41	3-3	
10896.10	C	8	3.34	4.47	4-5	x^3F^o-b^3G†
10820.31	C	5	3.32	4.46	3-4	(310)
10793.65	C	3	3.31	4.45	2-3	
5995.685	E	2	3.45	5.50	2-2	y^1D^o-e^1D (311)
9506.04	D	25	3.57	4.87	5-5	y^5F^o-f^5F†
9508.49	D	20	3.55	4.85	4-4	(312)
9510.81	D	12	3.54	4.84	3-3	
9511.80	D	8	3.54	4.83	2-2	
9511.55	D	10	3.53	4.83	1-1	
*8496.03	D	60	3.68	5.13	3-3	a^1F-v^1P^o (313)
7314.97	H	(0)	3.68	5.39	3-4	a^1F-v^1G^o (314)
10147.09	C	4	3.90	5.12	5-5	w^3G^o-e^3G
10119.30	C	3	3.89	5.11	4-4	(315)
10179.92	C	3	3.87	5.09	3-3	
5341.492	B	1	4.31	6.62	1-1	y^1P^o-e^1P (316)

Strongest Unclassified Lines of Ti I

11609.41	C	3	
11539.50	C	5	
11403.89	C	8	
11381.53	C	7	
11230.91	C	5	
10145.48	C	8	
9981.16	D	5	
8641.47	D	40	
8418.70	D	10	
6565.62	E	4	V
5369.635	A	4	III
4599.226	A	5	IV
4539.096	B	3	IV
4511.176	B	3	IV
4495.006	B	4	III
4129.166	B	4	III
4131.637	B	4	III
4037.426	B	4	IV
3985.246	B	3	III
3861.079	B	3n	IV†
3846.438	B	6n	IV
3836.763	B	5	IV
3833.674	B	4	III
3833.186	B	4	IV
3735.660	B	4n	IV
3715.371	B	3n	IV
3700.055	B	4n	IV
3644.699	E	4	IV
3633.458	E	5	IV
3631.999	E	3	IV
3585.852	E	4	III†
3556.184	E	3	IV
3507.436	E	3	IV
3459.431	E	3	III
3435.432	E	3	III
*3130.804§	A	15†	IV
3007.487	E	4N	IV

Ti II I P 13.6 Anal A List A Oct 1940

3349.399//	A	125	0.05	3.73	4½-5½	a^4F-z^4G^o (1)
3361.213	A	125	0.03	3.70	3½-4½	
3373.800	C	100	0.01	3.67	2½-3½	
3383.761	A	125	0.00	3.65	1½-2½	
3380.278	A	30	0.05	3.70	4½-4½	
3387.834	A	50	0.03	3.67	3½-3½	
3394.574	A	40	0.01	3.65	2½-2½	
3407.205	C	3	0.05	3.67	4½-3½	
3409.809	C	4	0.03	3.65	3½-2½	
3234.517	A	75	0.05	3.86	4½-4½	a^4F-z^4F^o (2)
3236.573	A	70	0.03	3.84	3½-3½	
3239.037	A	60	0.01	3.82	2½-2½	
3241.984	A	60	0.00	3.81	1½-1½	
3254.250	C	30	0.05	3.84	4½-3½	
3252.914	C	40	0.03	3.82	3½-2½	
3251.911	C	30	0.01	3.81	2½-1½	
3217.056	A	30	0.03	3.86	3½-4½	
3223.843	A	35	0.01	3.84	2½-3½	
3239.193	C	40	0.00	3.82	1½-2½	
3214.750	C	4	0.05	3.89	4½-3½	a^4F-z^2F^o (3)
3226.771	C	2	0.03	3.85	3½-2½	
3197.518	C	2	0.03	3.89	3½-3½	
*3213.145§	C	1	0.01	3.85	2½-2½	
3184.09	C	2	0.01	3.89	2½-3½	
3203.435	C	3	0.00	3.85	1½-2½	
3143.756	C	10	0.03	3.95	3½-2½	a^4F-z^2D^o (4)
3157.397	C	2	0.01	3.92	2½-1½	
*3130.804§	A	15	0.01	3.95	2½-2½	
3148.033	A	12	0.00	3.92	1½-1½	
3121.599	C	1	0.00	3.95	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
3088.027	A	75	0.05	4.05	4½-3½	a^4F-z^4D^o (5)
3078.645	A	50	0.03	4.04	3½-2½	
3075.235	A	40	0.01	4.02	2½-1½	
3073.971	C	40	0.00	4.02	1½- ½	
3072.107	C	30	0.03	4.05	3½-3½	
3066.220	C	30	0.01	4.04	2½-2½	
3066.354	C	20	0.00	4.02	1½-1½	
*3059.741	C	4	0.01	4.05	2½-3½	
3057.395	C	10	0.00	4.04	1½-2½	
3444.306	A	30	0.15	3.73	4½-5½	b^4F-z^4G^o (6)
3481.496	A	20	0.13	3.70	3½-4½	
3477.181	A	15	0.12	3.67	2½-3½	
3491.053	A	10	0.11	3.65	1½-2½	
3478.982	C	tr	0.15	3.70	4½-4½	
3489.739	C	2	0.13	3.67	3½-3½	
3500.340	C	2	0.12	3.65	2½-2½	
3505.45	P		0.15	3.67	4½-3½	
3513.09	F	tr	0.13	3.65	3½-2½	
3332.936	A	75	0.15	3.86	4½-4½	b^4F-z^4F^o (7)
3329.455	A	70	0.13	3.84	3½-3½	
3335.192	A	40	0.12	3.82	2½-2½	
3340.344	A	35	0.11	3.81	1½-1½	
3343.770	C	10	0.15	3.84	4½-3½	
3346.724	D	15	0.13	3.83	3½-2½	
3348.844	C	10†	0.12	3.81	2½-1½	
3308.806	C	8	0.13	3.86	3½-4½	
3318.034	A	10	0.12	3.84	2½-3½	
3326.762	A	20	0.11	3.82	1½-2½	
3302.096	C	0	0.15	3.89	4½-3½	b^4F-z^2F^o (8)
3319.063	C	(1)	0.13	3.85	3½-2½	
3288.142	C	0n	0.13	3.89	3½-3½	
3307.717	C	tr	0.12	3.85	2½-2½	
3276.998	C	tr	0.12	3.89	2½-3½	
m3299.44	P	Ti	0.11	3.85	1½-2½	
3231.315	C	4	0.13	3.95	3½-2½	b^4F-z^2D^o (9)
3248.70	P		0.12	3.93	2½-1½	
3230.467	C	1	0.12	3.95	2½-2½	
3240.71	C	1	0.11	3.93	1½-1½	
3212.70	P		0.11	3.95	1½-2½	
3188.519	A	40	0.15	4.05	4½-3½	b^4F-z^4D^o (10)
3182.570	C	35	0.13	4.04	3½-2½	
3161.755	A	30	0.12	4.02	2½-1½	
3161.205	C	25	0.11	4.03	1½- ½	
3155.670	C	12	0.13	4.05	3½-3½	
3152.251	C	15	0.12	4.04	2½-2½	
3154.195	C	12	0.11	4.02	1½-1½	
*3145.402	C	0	0.12	4.05	2½-3½?	
m3144.74	P	Ti+	0.11	4.04	1½-2½	
3987.63	P		0.60	3.70	3½-4½	a^2F-z^4G^o (11)
3981.998	B	tr	0.57	3.67	2½-3½	
4025.136	C	2	0.60	3.67	3½-3½	
4013.372	B	4	0.57	3.65	2½-2½	
4056.212	C	(1)	0.60	3.65	3½-2½	
3786.33	P		0.60	3.86	3½-4½	a^2F-z^4F^o (12)
3774.650	C	(3n)	0.57	3.84	2½-3½	
3813.390	B	2	0.60	3.84	3½-3½	
3796.899	B	2n	0.57	3.83	2½-2½	
3836.085	B	1	0.60	3.83	3½-2½	
3814.580	B	4	0.57	3.81	2½-1½	
3759.291	A	200	0.60	3.89	3½-3½	a^2F-z^2F^o (13)
3761.320	A	200	0.57	3.85	2½-2½	
3799.81	F	tr	0.60	3.85	3½-2½	
3721.632	B	15	0.57	3.89	2½-3½	
*3685.192	A	250	0.60	3.95	3½-2½	a^2F-z^2D^o (14)
			0.57	3.92	2½-1½	
3649.01	P		0.57	3.95	2½-2½	
3587.130	C	12	0.60	4.05	3½-3½	a^2F-z^4D^o (15)
3561.575	C	3	0.57	4.04	2½-2½	
3596.048	A	60	0.60	4.04	3½-3½	
3573.737	C	20	0.57	4.03	2½-1½	
3552.85	P		0.57	4.05	2½-3½	
3349.035	C	75	0.60	4.29	3½-4½	a^2F-z^2G^o (16)
*3341.875§	A	100	0.57	4.26	2½-3½	
3372.208	C	10†	0.60	4.26	3½-3½	
4762.77	F	(1)	1.08	3.67	2½-3½	a^2D-z^4G^o (17)
4798.535	C	(3)	1.08	3.65	1½-2½	
4806.33	P		1.08	3.65	2½-2½	
4469.160	C	tr	1.08	3.84	2½-3½	a^2D-z^4F^o (18)
4493.53	C	(1)	1.08	3.82	1½-2½	
4500.32	P		1.08	3.82	2½-2½	
4518.30	P		1.08	3.81	1½-1½	
4525.21	P		1.08	3.81	2½-1½	
4395.031	A	60	1.08	3.89	2½-3½	a^2D-z^2F^o (19)
4443.802	A	50	1.08	3.85	1½-2½	
4450.487	B	10	1.08	3.85	2½-2½	
4294.101	A	40	1.08	3.95	2½-2½	a^2D-z^2D^o (20)
4337.916	A	50	1.08	3.92	1½-1½	
4344.291	B	2	1.08	3.92	2½-1½	
4287.893	B	2	1.08	3.95	1½-2½	
4161.524	B	1	1.08	4.05	2½-3½	a^2D-z^4D^o (21)
4167.67	P		1.08	4.04	1½-2½	
4173.537	B	1	1.08	4.04	2½-2½	
4184.339	C	0	1.08	4.02	1½-1½	
4190.29	F	(1)	1.08	4.02	2½-1½	
4196.64	P		1.08	4.02	1½- ½	
3480.897	C	0	1.08	4.62	1½- ½	a^2D-z^2S^o (22)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
m3253.94	P	Ti+	1.08	4.87	2½-2½	a^2D-y^2D^o
3275.293	C	3	1.08	4.84	1½-1½	(23)
•3278.932§	C	35	1.08	4.84	2½-1½	
3249.370	C	2	1.08	4.87	1½-2½	
3239.664	C	30	1.08	4.89	2½-1½	a^2D-z^2P^o
3228.605	C	30	1.08	4.90	1½- ½	(24)
3236.122	C	20	1.08	4.89	1½-1½	
3195.717	C	3	1.08	4.94	2½-1½	a^2D-z^4S^o
3192.26	C	2	1.08	4.94	1½-1½	(25)
3190.874	C	30	1.08	4.95	2½-3½	a^2D-y^2F^o
3202.535	A	40	1.08	4.93	1½-2½	(26)
3205.990	C	1	1.08	4.93	2½-2½	
3118.824	C	2	1.08	5.04	2½-3½	a^2D-y^4D^o
3136.77	F	tr	1.08	5.01	1½-2½	(27)
3140.04	P		1.08	5.01	2½-2½	
3152.14	P		1.08	4.99	1½-1½	
3155.50	P		1.08	4.99	2½-1½	
3161.66	P		1.08	4.98	1½- ½	
2987.40	F	1	1.08	5.21	2½-2½	a^2D-z^4P^o
2996.88	P		1.08	5.19	1½-1½	(28)
2999.92	P		1.08	5.19	2½-1½	
3003.37	P		1.08	5.18	1½- ½	
2984.35	P		1.08	5.21	1½-2½	
4732.96	P		1.13	3.73	4½-5½	a^2G-z^4G^o
4787.30	P		1.11	3.70	3½-4½	(29)
4794.84	P		1.13	3.70	4½-4½	
4821.01	P		1.11	3.67	3½-3½	
4849.18	P		1.13	3.67	4½-3½	
4865.620	C	tr	1.11	3.65	3½-2½	
4506.74	P		1.13	3.86	4½-4½	a^2G-z^4F^o
4520.37	P		1.11	3.84	3½-3½	(30)
4545.144	C	tr	1.13	3.84	4½-3½	
4552.25	P		1.11	3.82	3½-2½	
4482.40	P		1.11	3.86	3½-4½	
4468.493	A	50	1.13	3.89	4½-3½	a^2G-z^2F^o
4501.270	A	40	1.11	3.85	3½-2½	(31)
4444.559	B	1	1.11	3.89	3½-3½	
4341.369	B	1	1.11	3.95	3½-2½	a^2G-z^2D^o (32)
4227.34	P		1.13	4.05	4½-3½	a^2G-z^4D^o
4218.18	P		1.11	4.04	3½-2½	(33)
4205.92	P		1.11	4.05	3½-3½	
3900.546	A	70	1.13	4.29	4½-4½	a^2G-z^2G^o
3913.464	A	60	1.11	4.26	3½-3½	(34)
3932.007	B	2	1.13	4.26	4½-3½	
3883.28	P		1.11	4.29	3½-4½	
3279.995	C	4	1.11	4.87	3½-2½	a^2G-y^2D^o (35)
3229.397	A	35	1.13	4.95	4½-3½	a^2G-y^2F^o
3232.380	C	30	1.11	4.93	3½-2½	(36)
3216.88	P		1.11	4.95	3½-3½	
3155.63	P		1.13	5.04	4½-3½	a^2G-y^4D^o
3165.24	P		1.11	5.01	3½-2½	(37)
3143.68	P		1.11	5.04	3½-3½	
m4629.29	P	Ti	1.18	3.84	2½-3½	a^4P-z^4F^o
4636.345	C	(1)	1.16	3.82	1½-2½	(38)
m4655.75	P	Ti	1.16	3.81	½-1½	
4662.74	P		1.18	3.82	2½-2½	
4662.71	P		1.16	3.81	1½-1½	
4689.46	P		1.18	3.81	2½-1½	
4549.82	P		1.18	3.89	2½-3½	a^4P-z^2F^o
4583.443	C	(1)	1.16	3.85	1½-2½	(39)
4609.26	P		1.18	3.85	2½-2½	
4441.73	P		1.18	3.95	2½-2½	a^4P-z^2D^o
4470.864	B	tr	1.16	3.92	1½-1½	(40)
4495.46	P		1.18	3.92	2½-1½	
4417.718	B	40	1.16	3.95	1½-2½	
4464.458	B	1	1.16	3.92	½-1½	
4300.052	B	60	1.18	4.05	2½-3½	a^4P-z^4D^o
4290.232	B	50	1.16	4.04	1½-2½	(41)
4301.938	B	15	1.16	4.02	½-1½	
4312.861	A	35	1.18	4.04	2½-2½	
4307.900	A	40	1.16	4.02	1½-1½	
4314.979	B	40	1.16	4.02	½- ½	
4330.708	B	0	1.18	4.02	2½-1½	
4320.965	B	1	1.16	4.02	1½- ½	
3566.00	F	6	1.16	4.62	1½- ½	a^4P-z^2S^o
3561.910	C	1	1.16	4.62	½- ½	(42)
3336.998	C	tr	1.18	4.87	2½-2½	a^4P-y^2D^o
•3350.548§	C	1	1.16	4.84	1½-1½	(43)
3364.30	P		1.18	4.84	2½-1½	
3323.39	F		1.16	4.87	1½-2½	
3346.91	P		1.16	4.84	½-1½	
3322.98	P	Ti+	1.18	4.89	2½-1½	a^4P-z^2P^o
3301.71	F	(2)	1.16	4.90	1½- ½	(44)
3309.53	P	Ti	1.16	4.89	1½-1½	
3298.21	F	(1)	1.16	4.90	½- ½	
3306.053	C	tr	1.16	4.89	½-1½	
3276.774	C	5	1.18	4.94	2½-1½	a^4P-z^4S^o
3263.686	C	4	1.16	4.94	1½-1½	(45)
3260.359§	C	3	1.16	4.94	½-1½	
3195.994	C	tr	1.18	5.04	2½-3½	a^4P-y^4D^o
3205.64	P		1.16	5.01	1½-2½	(46)
3218.44	P		1.16	4.99	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
m3318.26	P	Ti+	1.18	5.01	2½-2½	a^4P-y^4D^o
3231.76	P		1.16	4.99	1½-1½	cont
3228.36	P		1.16	4.98	½- ½	
m3234.50	P	Ti+	1.18	4.99	2½-1½	
3231.71	P		1.16	4.98	1½- ½	
3058.090	C	50	1.18	5.21	2½-2½	a^4P-z^4P^o
•3059.741	C	6	1.16	5.19	1½-1½	(47)
3063.502	C	4	1.16	5.18	½- ½	
3071.342	C	15	1.18	5.19	2½-1½	
3066.514	C	3	1.16	5.18	1½- ½	
3046.685	C	30	1.16	5.21	1½-2½	
3056.740	C	15	1.16	5.19	½-1½	
4764.535	C	(1)	1.23	3.82	1½-2½	a^3P-z^4F^o
4763.84	P		1.22	3.81	½-1½	(48)
4792.39	P		1.23	3.81	1½-1½	
4708.663	C	tr	1.23	3.85	1½-2½	a^3P-z^3F^o (49)
4533.986	B	30	1.23	3.95	1½-2½	a^3P-z^3D^o
4563.761	A	30	1.22	3.92	½-1½	(50)
4589.961	B	2	1.23	3.92	1½-1½	
4399.767	A	35	1.23	4.04	1½-2½	a^3P-z^4D^o
4394.057	B	2	1.22	4.02	½-1½	(51)
4418.340	B	1	1.23	4.02	1½-1½	
4407.678	C	1	1.22	4.02	½- ½	
4433.089	C	tr	1.23	4.02	1½- ½	
3641.330	A	100	1.23	4.62	1½- ½	a^3P-z^3S^o
3624.826	A	70	1.22	4.62	½- ½	(52)
3388.755	C	8	1.23	4.87	1½-2½	a^3P-y^3D^o
3402.422	C	8	1.22	4.84	½-1½	(53)
3416.957	C	2	1.23	4.84	1½-1½	
3374.352	C	8	1.23	4.89	1½-1½	a^3P-z^3P^o
3352.071	C	5	1.22	4.90	½- ½	(54)
•3366.176§	C	8	1.23	4.90	1½- ½	
3360.16	P		1.22	4.89	½-1½	
3337.85	F	2	1.23	4.93	1½-2½	a^3P-y^3F^o (55)
3326.68	P		1.23	4.94	1½-1½	a^3P-z^3S^o
3312.90	P		1.22	4.94	½-1½	(56)
3266.43	F	(1)	1.23	5.01	1½-2½	a^3P-y^4D^o
3269.77	F	(1)	1.22	4.99	½-1½	(57)
3283.14	P		1.23	4.99	1½-1½	
m3279.97	P	Ti+	1.22	4.98	½- ½	
3293.48	P		1.23	4.98	1½- ½	
m3101.52	P	Ti	1.23	5.21	1½-2½	a^3P-z^4P^o
3102.975	C	2	1.22	5.19	½-1½	(58)
3115.088	C	1	1.23	5.19	1½-1½	
3109.93	P		1.22	5.18	½- ½	
3122.065	C	2	1.23	5.18	1½- ½	
4657.210	C	tr	1.24	3.89	2½-3½	b^4P-z^3F^o
4698.67	P		1.23	3.85	1½-2½	(59)
4719.515	C	(1)	1.24	3.85	2½-2½	
4544.009	C	tr	1.24	3.95	2½-2½	b^4P-z^2D^o
4580.458	C	(1)	1.23	3.92	1½-1½	(60)
4600.38	P		1.24	3.92	2½-1½	
4524.732	C	(1?)	1.23	3.95	1½-2½	
4568.312	C	(1)	1.22	3.92	½-1½	
4395.848	B	2	1.24	4.05	2½-3½	b^4P-z^4D^o
4390.977	B	tr	1.23	4.04	1½-2½	(61)
4398.314	C	(1)	1.22	4.02	½-1½	
4409.22	C	tr	1.24	4.04	2½-2½	
4409.519	C	tr	1.23	4.02	1½-1½	
4411.936	C	(1)	1.22	4.02	½- ½	
4427.90	P		1.24	4.02	2½-1½	
4423.22	P		1.23	4.02	1½- ½	
3635.36	P		1.23	4.62	1½- ½	b^4P-z^3S^o
3627.71	C	(1)	1.22	4.62	½- ½	(62)
3394.37	P		1.24	4.87	2½-2½	b^4P-y^3D^o
m3411.68	P	Ti	1.23	4.84	1½-1½	(63)
3422.661	C	(1)	1.24	4.84	2½-1½	
3383.57	P		1.23	4.87	1½-2½	
3404.97	C	(1)	1.22	4.84	½-1½	
3379.930	C	1n	1.24	4.89	2½-1½	b^4P-z^3P^o
m3361.07	P	Ti	1.23	4.90	1½- ½	(64)
3369.212	C	2	1.23	4.89	1½-1½	
3354.54	P		1.22	4.90	½- ½	
3362.653	C	1	1.22	4.89	½-1½	
3332.111	A	30	1.24	4.94	2½-1½	b^4P-z^4S^o
3321.700	C	25	1.23	4.94	1½-1½	(65)
3315.324	C	10	1.22	4.94	½-1½	
•3348.602§	C	50	1.24	5.04	2½-3½	b^4P-y^4D^o
•3361.596	A	60	1.23	5.01	1½-2½	(66)
3372.080	C	25	1.22	4.99	½-1½	
3371.652	C	25	1.24	5.01	2½-2½	
3378.290	C	30	1.23	4.99	1½-1½	
3382.329	C	25	1.22	4.98	½- ½	
3388.428	C	5	1.24	4.99	2½-1½	
3388.575	C	5	1.23	4.98	1½- ½	
3106.234	C	35	1.24	5.21	2½-2½	b^4P-z^4P^o
3110.620	C	20	1.23	5.19	1½-1½	(67)
3112.050	C	10	1.22	5.18	½- ½	
3119.800	C	15	1.24	5.19	2½-1½	
3117.869	C	20	1.23	5.18	1½- ½	
3097.186	C	25	1.23	5.21	1½-2½	
3105.084	C	20	1.22	5.19	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
5446.46	P		1.57	3.84	2½-3½	b^2D-z^4F^o
5454.05	P		1.56	3.82	1½-2½	(68)
5492.82	P		1.57	3.82	2½-2½	
5490.65	P		1.56	3.81	1½-1½	
5529.94	P		1.57	3.81	2½-1½	
5336.809	B	4	1.57	3.89	2½-3½	b^2D-z^2F^o
5381.020	B	1	1.56	3.85	1½-2½	(69)
5418.802	B	0	1.57	3.85	2½-2½	
5188.700	C	6	1.57	3.95	2½-3½	b^2D-z^2D^o
5236.534	B	5	1.56	3.92	1½-1½	(70)
5262.104	C	0	1.57	3.92	2½-1½	
5154.061	B	0	1.56	3.95	1½-2½	
4995.89	P		1.57	4.05	2½-3½	b^2D-z^4D^o
4981.38	P		1.56	4.04	1½-2½	(71)
5013.712	C	tr	1.57	4.04	2½-2½	
5005.18	P		1.56	4.02	1½-1½	
5037.81	P		1.57	4.02	2½-1½	
m5022.82	P	Ti	1.56	4.02	1½- ½	
3741.633	B	50	1.57	4.87	2½-3½	b^2D-y^2D^o
3757.684	B	30	1.56	4.84	1½-1½	(72)
3776.062	B	6	1.57	4.84	2½-1½	
3723.631	C	tr	1.56	4.87	1½-2½	
3724.106	C	1	1.57	4.89	2½-1½	b^2D-z^2P^o
3696.39	C	(1)	1.56	4.90	1½- ½	(73)
3706.219	B	20	1.56	4.89	1½-1½	
3666.11	P		1.57	4.94	2½-1½	b^2D-z^4S^o
3648.80	P		1.56	4.94	1½-1½	(74)
3659.765	C	60	1.57	4.95	2½-3½	b^2D-y^2F^o
3662.237	C	40	1.56	4.93	1½-2½	(75)
3679.673	C	(3)	1.57	4.93	2½-2½	
3565.326	C	3	1.57	5.04	2½-3½	b^2D-y^4D^o
3576.38	F	(On)	1.56	5.01	1½-2½	(76)
3593.093	C	2	1.57	5.01	2½-2½	
3596.55	C	tr	1.56	4.99	1½-1½	
3613.30	P		1.57	4.99	2½-1½	
3608.89	P		1.56	4.98	1½- ½	
3110.095	C	8	1.57	5.54	2½-2½	b^2D-x^2D^o
3096.424	C	2	1.56	5.54	1½-1½	(77)
3108.927	C	0	1.57	5.54	2½-1½	
3097.636	C	1	1.56	5.54	1½-2½	
3048.766	C	6	1.57	5.62	2½-1½	b^2D-y^2P^o
3043.851	C	5	1.56	5.61	1½- ½	(78)
3036.784	C	1	1.56	5.62	1½-1½	
5723.87	P		1.58	3.73	5½-5½	a^2H-z^4G^o
5781.73	P		1.56	3.70	4½-4½	(79)
5814.62	P		1.58	3.70	5½-4½	
5860.92	P		1.56	3.67	4½-3½	
5691.99	P		1.56	3.73	4½-5½	
5396.3	F	(1)	1.58	3.86	5½-4½	a^2H-z^4F^o
5422.47	F	(1)	1.56	3.84	4½-3½	(80)
5367.95	P		1.56	3.86	4½-4½	
5313.76	P		1.56	3.89	4½-3½	a^2H-z^2F^o (81)
4549.622	A	60n	1.58	4.29	5½-4½	a^2H-z^2G^o
4571.971	A	50n	1.56	4.26	4½-3½	(82)
4539.465	C	1	1.56	4.29	4½-4½	
3648.86	C	(0)	1.56	4.95	4½-3½	a^2H-y^2F^o (83)
3224.241	C	35	1.58	5.40	5½-4½	a^2H-y^2G^o
3218.270	C	25	1.56	5.40	4½-3½	(84)
3214.14	F	1	1.56	5.40	4½-4½	
3017.187	C	50	1.58	5.67	5½-5½	a^2H-z^2H^o
3029.730	C	35	1.56	5.64	4½-4½	(85)
3038.706	C	6	1.58	5.64	5½-4½	
3008.332	C	2	1.56	5.67	4½-5½	
5139.143	B	1	1.88	4.29	4½-4½	b^2G-z^2G^o
5185.90	E	2	1.88	4.26	3½-3½	(86)
5183.72	C	tr	1.88	4.26	4½-3½	
5131.38	P		1.88	4.29	3½-4½	
4028.332	B	7	1.88	4.95	4½-3½	b^2G-y^2F^o
4053.814	B	3	1.88	4.93	3½-2½	(87)
4029.64	P		1.88	4.95	3½-3½	
3504.890	A	80	1.88	5.40	4½-4½	b^2G-y^2G^o
3510.840	A	60	1.88	5.40	3½-3½	(88)
3509.844	C	3	1.88	5.40	4½-3½	
3505.901	C	tr	1.88	5.40	3½-4½	
•3261.596	A	60	1.88	5.67	4½-5½	b^2G-z^2H^o
3287.657	A	40	1.88	5.64	3½-4½	(89)
3286.756	C	0	1.88	5.64	4½-4½	
3103.804	C	50	1.88	5.86	4½-3½	b^2G-x^2F^o
3089.401	C	15	1.88	5.88	3½-2½	(90)
3104.593	C	3	1.88	5.86	3½-3½	
6491.61	P	(2)	2.05	3.95	1½-2½	b^2P-z^2D^o
6559.580	C	(1)	2.04	3.92	½-1½	(91)
6607.03	P		2.05	3.92	1½-1½	
4805.105	B	2	2.05	4.62	1½- ½	b^2P-z^2S^o
4779.986	B	1	2.04	4.62	½- ½	(92)
4374.825	B	1	2.05	4.87	1½-2½	b^2P-y^2D^o
m4400.63	P	Ti	2.04	4.84	½-1½	(93)
4421.949	B	1	2.05	4.84	1½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
4350.834	C	1	2.05	4.89	1½-1½	$b^2P-z^2P^o$
4316.807	B	1	2.04	4.90	½- ½	(94)
4337.33	C	(1)	2.05	4.90	1½- ½	
4330.264	B	0	2.04	4.89	½-1½	
4371.94	P		2.05	4.94	1½-1½	$b^2P-z^4S^o$
4252.05	P		2.04	4.94	½-1½	(95)
4173.05	P		2.05	5.01	1½-2½	$b^2P-y^4D^o$
4181.17	P		2.04	4.99	½-1½	(96)
4200.40	P		2.05	4.99	1½-1½	
4197.95	P		2.04	4.98	½- ½	
4217.34	P		2.05	4.98	1½- ½	
3907.65	P		2.05	5.21	1½-2½	$b^2P-z^4P^o$
3912.32	P		2.04	5.19	½-1½	(97)
3929.15	P		2.05	5.19	1½-1½	
3923.39	P		2.04	5.18	½- ½	
3940.32	P		2.05	5.18	1½- ½	
3535.408	A	40	2.05	5.54	1½-2½	$b^2P-x^2D^o$
3520.253	C	20	2.04	5.54	½-1½	(98)
3533.868	C	2	2.05	5.54	1½-1½	
3456.390	C	20	2.05	5.63	1½-1½	$b^2P-y^2P^o$
3452.470	C	4	2.04	5.61	½- ½	(99)
3465.562	C	3	2.05	5.61	1½- ½	
3443.387	C	1	2.04	5.62	½-1½	
8979.34	P		2.58	3.95	3½-2½	$b^3F-z^2D^o$
9358.67	P		2.59	3.92	2½-1½	(100)
9027.90	P		2.59	3.95	2½-2½	
7214.78	P		2.58	4.29	3½-4½	$b^3F-z^3G^o$
7355.46	P		2.59	4.26	2½-3½	(101)
7323.20	P		2.58	4.26	3½-3½	
5379.19	P		2.58	4.87	3½-2½	$b^3F-y^2D^o$
5468.44	P		2.59	4.84	2½-1½	(102)
5396.59	P		2.59	4.87	2½-2½	
5211.544	C	0	2.58	4.95	3½-3½	$b^3F-y^3F^o$
5268.62	C	1	2.59	4.93	2½-2½	(103)
5252.04	P		2.58	4.93	3½-3½	
5227.87	P		2.59	4.95	2½-3½	
4367.657	B	15	2.58	5.40	3½-4½	$b^3F-y^3G^o$
4386.858	B	10	2.59	5.40	2½-3½	(104)
4375.35	P		2.58	5.40	3½-3½	
4163.644	A	40	2.58	5.54	3½-2½	$b^3F-x^3D^o$
4171.897	A	30	2.59	5.54	2½-1½	(105)
*4174.088§	B	(3)	2.59	5.54	2½-3½	
4064.350	B	(1)	2.59	5.62	2½-1½	$b^3F-y^3P^o$ (106)
3761.866	B	15	2.58	5.86	3½-3½	$b^3F-x^3F^o$
3748.010	B	10	2.59	5.88	2½-2½	(107)
3739.6	F	tr	2.58	5.88	3½-3½	
3770.412	C	(1)	2.59	5.86	2½-3½	
6212.30	F	(1)	2.63	4.62	½- ½	$a^2S-z^2S^o$ (108)
5473.517	B	(1)	2.63	4.89	½-1½	$a^2S-z^2P^o$
5452.03	F	(1)	2.63	4.90	½- ½	(109)
4822.39	P		2.63	5.19	½-1½	$a^2S-z^4P^o$
4839.251	C	(1)	2.63	5.18	½- ½	(110)
3144.730	C	1	2.63	6.56	½-1½	$a^2S-x^2P^o$
*3145.402	C	0	2.63	6.56	½- ½	(111)
6717.911	C	(1n)	3.11	4.95	2½-3½	$c^2D-y^3F^o$
6680.26	F	(1)	3.08	4.93	1½-2½	(112)
6785.25	P		3.11	4.93	2½-2½	
5072.30	E	2	3.11	5.54	2½-2½	$c^2D-x^2D^o$
5010.202	C	tr	3.08	5.54	1½-1½	(113)
5069.12	F	tr	3.11	5.54	2½-1½	
5013.38	P		3.08	5.54	1½-2½	
4911.205	B	0	3.11	5.82	2½-1½	$c^2D-y^3P^o$
4874.025	B	tr	3.08	5.61	1½- ½	(114)
4855.95	P		3.08	5.62	1½-1½	
4488.319	B	15	3.11	5.86	2½-3½	$c^2D-x^3F^o$
4411.080	B	15	3.08	5.88	1½-2½	(115)
4456.650	C	tr	3.11	5.88	2½-2½	
3644.87	P		3.11	6.50	2½-3½	$c^2D-x^4D^o$
3633.99	P		3.08	6.48	1½-2½	(116)
3664.86	P		3.11	6.48	2½-2½	
3635.64	P		3.08	6.48	1½-1½	
3666.592	C	(On)	3.11	6.48	2½-1½	
3652.81	P		3.08	6.46	1½- ½	
3578.687	C	(0)	3.11	6.56	2½-1½	$c^2D-x^2P^o$
3550.19	P		3.08	6.56	1½- ½	(117)
3549.27	P		3.08	6.56	1½-1½	
3524.87	C	tr	3.11	6.61	2½-2½	$c^2D-w^2D^o$
3491.19	P		3.08	6.62	1½-1½	(118)
3519.67	P		3.11	6.62	2½-1½	
3496.29	P		3.08	6.61	1½-2½	
3090.051	C	8n	3.73	7.73	5½-4½	$z^4G^o-e^4F$
3081.575	C	5n	3.70	7.70	4½-3½	(119)
3072.54	E	(On)	3.67	7.69	3½-3½	
3063.280	C	3	3.65	7.68	2½-1½	
3194.56	C	8n?	3.86	7.73	4½-4½	$z^4F^o-e^4F$
3194.26	C	5n?	3.84	7.70	3½-3½	(120)
3192.68	C	4n	3.83	7.69	2½-2½	
3189.52	C	5n	3.81	7.68	1½-1½	
3213.59	E	tr	3.86	7.70	4½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti II continued						
3208.607	C	1n	3.84	7.69	3½-2½	$z^4F^o-e^4F$
3175.66	C	2n	3.84	7.73	3½-4½	cont
3178.630	C	3n	3.82	7.70	2½-3½	
3180.225	C	2n	3.81	7.69	1½-2½	
*3128.640§	C	10n	3.89	7.83	3½-3½	$z^2F^o-e^2F$
3127.883	C	10n	3.85	7.80	2½-2½	(121)
3155.91	P		3.89	7.80	3½-2½	
3181.84	C	8n	3.95	7.83	2½-3½	$z^2D^o-e^2F$
3182.57	C	6n	3.92	7.80	1½-2½	(122)
2990.16	C	10	3.95	8.08	2½-3½	$z^2D^o-f^2F$
2979.199	C	10	3.92	8.06	1½-2½	(123)
3351.67	C	1n	4.05	7.73	3½-4½	$z^4D^o-e^4F$
3364.9	F	1n	4.04	7.70	2½-3½	(124)
3369.67	E	On	4.02	7.69	1½-2½	
3483.80	C	4n	4.29	7.83	4½-3½	$z^2G^o-e^2F$
3492.39	F	3n	4.26	7.80	3½-2½	(125)
3459.03	F	(On)	4.28	7.83	3½-3½	
3022.830	C	15	4.29	8.37	4½-4½	$z^2G^o-e^2G$
3023.86	C	12	4.26	8.35	3½-3½	(126)
3414.02	F	(0)	5.04	8.53	3½-4½	$y^4D^o-f^4F$ (127)

Strongest Unclassified Lines of Ti II

3194.76	C	6n?
3174.80	C	5
3164.91	F	8 V+ ?
3045.085	C	5n

Ti IV I P 43.06 Anal A List A Dec 1940

5398.82	A	8	26.22	28.51	½-1½	$5^2S-5^2P^o$
5493.43	A	6	26.22	28.47	½- ½	
3576.44	A	4	28.51	31.96	1½-2½	$5^2P^o-5^2D$
3541.44	A	3	28.47	31.95	½-1½	
4397.37	A	2	29.15	31.96	3½-2½	$4^2F^o-5^2D$
4403.54	A	2	29.15	31.95	2½-1½	
*4647.40	A	3	(34.38	37.04	4½-5½	$5^2G-6^2H^o$
			34.38	37.04	3½-4½	

V I I P 6.71 Anal A List C Nov 1940

5633.469	A	1	0.07	2.26	4½-3½	$a^4F-z^6D^o$
*5593.962	A	1	0.04	2.25	3½-2½	(1)
5557.453	A	1	0.02	2.24	2½-1½	
5537.72	A	(1)	0.00	2.23	1½- ½	
5560.548	C	(3)	0.04	2.28	3½-3½	
5535.382	A	(1)	0.02	2.25	2½-2½	
5515.371	B	(4)	0.00	2.24	1½-1½	
5515.083	A	1	0.07	2.31	4½-5½	$a^4F-z^6F^o$ †
5498.020	B	(3)	0.04	2.29	3½-4½	(2)
5483.471	B	(1)	0.02	2.27	2½-3½	
4881.554	A	50w	0.07	2.60	4½-3½	$a^4F-z^4D^o$
4875.462	A	40w	0.04	2.57	3½-2½	(3)
4864.741	A	40w	0.02	2.55	2½-1½	
4851.483	A	40w	0.00	2.54	1½- ½	
4827.458	A	30	0.04	2.60	3½-3½	
4831.642	A	35	0.02	2.57	2½-2½	
4832.437	A	30	0.00	2.55	1½-1½	
4784.480	A	5	0.02	2.60	2½-3½	
4799.786	A	5	0.00	2.57	1½-2½	
4594.103	A	60w	0.07	2.75	4½-5½	$a^4F-z^4G^o$
4588.364	A	50w	0.04	2.73	3½-4½	(4)
4580.394	A	40w	0.02	2.71	2½-3½	
4577.173	A	40w	0.00	2.70	1½-2½	
4635.176	A	15	0.07	2.73	4½-4½	
4619.771	A	25	0.04	2.71	3½-3½	
4606.146	A	15	0.02	2.70	2½-2½	
4689.273	B	(2)	0.07	2.71	4½-3½	
4645.971	A	1	0.04	2.70	3½-2½	
4353.872	C	50w	0.07	2.90	4½-4½	$a^4F-z^4F^o$
4341.013	C	40w	0.04	2.88	3½-3½	(5)
4332.823	C	30w	0.02	2.87	2½-2½	
4330.034	C	30w	0.00	2.85	1½-1½	
*4384.732	C	125r	0.07	2.88	4½-3½	
4368.042	C	10	0.04	2.87	3½-2½	
4355.943	C	10	0.02	2.85	2½-1½	
4309.795	C	20	0.04	2.90	3½-4½	
4306.214	C	15	0.02	2.88	2½-3½	
4307.184	C	12	0.00	2.87	1½-2½	
*4234.000	C	12	0.04	2.95	3½-2½	$a^4F-z^2D^o$
4259.313	C	8	0.02	2.91	2½-1½	(6)
4300.89	G	1	0.02	2.95	2½-2½	
*4234.534§	C	8	0.00	2.91	1½-1½	
4176.793	B	(3)	0.00	2.95	1½-2½	
3903.250	C	50r	0.07	3.23	4½-4½	$a^4F-y^4F^o$
3875.075	C	35	0.04	3.22	3½-3½	(7)
3864.882	C	35	0.02	3.21	2½-2½	
3855.370	C	30	0.00	3.20	1½-1½	
*3909.894	C	20	0.07	3.22	4½-3½	
3893.859	C	25	0.04	3.21	3½-2½	
3875.902	C	20	0.02	3.20	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
3867.602	C	15	0.04	3.23	3½-4½	$a^4F-y^4F^o$
*3847.323§	E	20	0.03	3.22	2½-3½	cont
3844.438	C	20	0.00	3.21	1½-2½	
3876.086	C	20	0.07	3.25	4½-4½	$a^4F-z^2G^o$
3890.184	C	25	0.04	3.21	3½-3½	(8)
*3925.340	C	10	0.07	3.21	4½-3½	
3841.890	C	5	0.04	3.25	3½-4½	
3862.223	C	12	0.02	3.21	2½-3½	
3855.841	C	60r	0.07	3.27	4½-3½	$a^4F-y^4D^o$
3840.752	C	60r	0.04	3.25	3½-2½	(9)
3828.559	C	60r	0.02	3.24	2½-1½	
3818.244	C	60	0.00	3.23	1½- ½	
3832.009	C	30	0.04	3.27	3½-3½	
3813.492	C	60	0.02	3.25	2½-2½	
3808.521	C	40	0.00	3.24	1½-1½	
*3794.964	C	50	0.02	3.27	2½-3½	
3793.814	C	8	0.00	3.25	1½-2½	
3817.844	C	8	0.07	3.30	4½-4½	$a^4F-y^6D^o$ †
3803.902	C	8	0.04	3.28	3½-3½	(10)
3791.326	C	2	0.02	3.27	2½-2½	
*3781.393	C	3	0.00	3.26	1½-1½	
3713.957	C	5	0.07	3.39	4½-3½	$a^4F-z^3F^o$ †
3721.358	C	3	0.04	3.36	3½-2½	(11)
3298.139	C	15	0.07	3.81	4½-5½	$a^4F-y^4G^o$
3283.311	C	15	0.04	3.80	3½-4½	(12)
3271.637	C	12	0.02	3.79	2½-3½	
3263.238	C	15	0.00	3.78	1½-2½	
3308.248	C	3	0.07	3.80	4½-4½	
3291.676	C	4	0.04	3.79	3½-3½	
3277.939	C	5	0.02	3.78	2½-2½	
3249.566	C	10	0.07	3.87	4½-4½	$a^4F-x^4F^o$ †
3230.646	C	6	0.04	3.86	3½-3½	(13)
3215.375	C	4	0.02	3.86	2½-2½	
3204.198	C	3	0.00	3.85	1½-1½	
*3254.773§	E	10	0.07	3.88	4½-3½	
3185.398	C	200R	0.07	3.94	4½-5½	$a^4F-x^4G^o$
3183.96	F	(125R)	0.04	3.92	3½-4½	(14)
3183.406	C	150R	0.02	3.89	2½-3½	
3183.982	C	(150R)	0.00	3.88	1½-2½	
3207.410	C	20	0.07	3.92	4½-4½	
3202.381	C	25	0.04	3.89	3½-3½	
3198.012	C	20	0.02	3.88	2½-2½	
3226.106	C	4	0.07	3.89	4½-3½	
*3217.121§	E	10	0.04	3.88	3½-2½	
3091.437	C	20	0.07	4.08	4½-3½	$a^4F-x^4D^o$
3091.552	D	15	0.04	4.03	3½-2½	(15)
3093.24	F	8†	0.02	4.01	2½-1½	
3090.40	F	(1)	0.00	3.99	1½- ½	
3069.845	C	30r	0.04	4.06	3½-3½	
*3073.823	C	60r	0.02	4.03	2½-2½	
3080.146	C	6	0.00	4.01	1½-1½	
3052.194	C	20	0.02	4.06	2½-3½	
3060.93	C	2	0.00	4.03	1½-2½	
3063.734	C	12	0.02	4.05	2½-1½	$a^4F-z^2P^o$
3054.89	F	1	0.00	4.04	1½- ½	(16)
3050.890	C	35r	0.00	4.05	1½-1½	
3068.375	C	125R	0.07	4.09	4½-4½	$a^4F-w^4F^o$
3060.460	C	125R	0.04	4.07	3½-3½	(17)
3056.334	C	100R	0.02	4.06	2½-2½	
3053.65	F	80R	0.00	4.04	1½-1½	
3082.109	B	50r	0.07	4.07	4½-3½	
*3073.823	C	60r	0.04	4.06	3½-2½	
3066.51	F	20	0.02	4.04	2½-1½	
3044.936	C	50r	0.04	4.09	3½-4½	
3043.124	C	50r	0.02	4.07	2½-3½	
*3043.555§	C	50r	0.00	4.06	1½-2½	
2977.539	C	25r	0.07	4.21	4½-3½	$a^4F-w^4D^o$ †
2968.772	C	30r	0.04	4.21	3½-2½	(18)
2954.332	C	20	0.02	4.19	2½-1½	
2957.33	C	10†	0.04	4.21	3½-3½	
8243.11	A	30	0.30	2.28	4½-4½	$a^6D-z^6D^o$
8251.83	A	30	0.29	2.26	3½-3½	(19)
8256.906	A	8	0.27	2.25	2½-2½	
6258.595	A	8	0.26	2.23	½- ½	
6296.518	A	15	0.30	2.26	4½-3½	
6292.858	A	20	0.29	2.25	3½-2½	
8285.185	A	20	0.27	2.24	2½-1½	
6274.670	A	15	0.27	2.23	1½- ½	
8199.202	A	30	0.29	2.28	3½-4½	
6216.368	A	30	0.27	2.26	2½-3½	
8230.736	A	30	0.27	2.25	1½-2½	
6242.80	A	15	0.28	2.24	½-1½	
8150.132	A	15	0.30	2.31	4½-5½	$a^8D-z^6F^o$
6170.340	A	8	0.29	2.29	3½-4½	(20)
6189.350	A	3	0.27	2.27	2½-3½	
6207.251	A	(5)	0.27	2.25	1½-2½	
6224.26	P		0.28	2.24	½-1½	
6213.874	A	15	0.30	2.29	4½-4½	
8224.507	A	15	0.29	2.27	3½-3½	
6233.187	A	12	0.27	2.25	2½-2½	
6240.137	A	6	0.27	2.24	1½-1½	
6245.214	A	2	0.26	2.24	½- ½	
*6268.841	A	8	(0.30	2.27	4½-3½	
			0.29	2.25	3½-2½	
6266.32	A	7	0.27	2.24	2½-1½	
6281.236	A	5	0.27	2.24	1½- ½	
4460.293	C	50	0.30	3.07	4½-3½	$a^8D-z^6P^o$
4459.760	C	30	0.29	3.05	3½-2½	(21)
4457.479	C	15	0.27	3.04	2½-1½	
4437.837	C	20	0.29	3.07	3½-3½	
4441.683	C	25	0.27	3.05	2½-2½	
4444.207	C	20	0.27	3.04	1½-1½	
4419.935	C	12	0.27	3.07	2½-3½	
4438.515	C	15	0.27	3.05	1½-2½	
4436.138	C	15	0.26	3.04	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
4379.236//	C	150rw	0.30	3.12	4½-5½	a^6D-y^6F^o
•4384.722	C	135r	0.29	3.10	3½-4½	(22)
4389.974	C	100	0.27	3.09	2½-3½	
4395.238	C	60	0.27	3.07	1½-2½	
4400.575	C	60	0.26	3.07	½-1½	
4406.641	C	60	0.30	3.10	4½-4½	
4407.637	C	70	0.29	3.09	3½-3½	
4408.204	C	70	0.27	3.07	2½-2½	
•4408.511	C	90	(0.27	3.07	1½-1½	
			0.26	3.06	½- ½	
4429.796	C	15	0.30	3.09	4½-3½	
4426.005	C	20	0.29	3.07	3½-2½	
4421.573	C	20	0.27	3.07	2½-1½	
4416.474	C	20	0.27	3.06	1½- ½	
•4381.04	G	1	0.29	3.10	3½-2½	a^6D-z^4P^o †
•4405.011	C	4	0.27	3.08	2½-1½	(23)
4363.535	C	5	0.27	3.10	2½-2½	
4392.074	C	5	0.27	3.08	1½-1½	
4309.657	C	20	0.30	3.23	4½-4½	a^6D-y^4F^o †
4196.611	C	4	0.29	3.22	3½-3½	(24)
4216.710	C	4	0.30	3.22	4½-3½	
4219.51	G	2	0.29	3.21	3½-2½	
4169.641	C	12	0.29	3.23	3½-4½	
4182.591	C	10	0.27	3.22	2½-3½	
4191.558	C	10	0.27	3.21	1½-2½	
4179.419	C	15	0.30	3.25	4½-4½	a^6D-z^2G^o †
4159.686	C	6	0.29	3.25	3½-4½	(25)
4136.386	C	3	0.29	3.27	3½-3½	a^6D-y^4D^o †
4142.66	G	2	0.27	3.25	2½-2½	(26)
4148.859	C	2	0.27	3.24	1½-1½	
4153.386	C	2	0.26	3.23	½- ½	
4111.765	C	100R	0.30	3.30	4½-4½	a^6D-y^6D^o
4115.185	C	60	0.29	3.26	3½-3½	(27)
4116.470	C	50	0.27	3.27	2½-2½	
4116.703	C	4	0.27	3.26	1½-1½	
4116.60	P		0.26	3.26	½- ½	
4134.488	C	60	0.30	3.28	4½-3½	
4133.017	C	60	0.29	3.27	3½-2½	
4128.071	C	60	0.27	3.26	2½-1½	
4123.566	C	60	0.27	3.26	1½- ½	
4092.694	C	50	0.29	3.30	3½-4½	
4099.796	C	60	0.27	3.28	2½-3½	
4105.167	C	60	0.27	3.27	1½-2½	
4109.786	C	50	0.26	3.26	½-1½	
•3794.964	C	50	0.30	3.55	4½-4½	a^6D-x^6D^o
3803.474	C	25	0.29	3.53	3½-3½	(28)
3809.597	C	15	0.27	3.51	2½-2½	
m3813.45	P	V	0.27	3.50	1½-1½	
3815.514	C	10	0.26	3.50	½- ½	
3819.963	C	15	0.30	3.53	4½-3½	
3822.888	C	15	0.29	3.51	3½-2½	
3823.213	C	15	0.27	3.50	2½-1½	
3821.487	C	15	0.27	3.50	1½- ½	
3778.684	C	25	0.29	3.55	3½-4½	
3790.324	C	20	0.27	3.53	2½-3½	
3799.913	C	25	0.27	3.51	1½-2½	
3807.505	C	20	0.26	3.50	½-1½	
3703.584	C	100	0.30	3.63	4½-3½	a^6D-y^6P^o
3704.699	C	60	0.29	3.62	3½-2½	(29)
3705.035	C	30	0.27	3.61	2½-1½	
3666.069	C	50	0.29	3.63	3½-3½	
3692.225	C	50	0.27	3.62	2½-2½	
3695.665	C	40	0.27	3.61	1½-1½	
3675.700	C	30	0.27	3.63	2½-3½	
3683.126	C	30	0.27	3.62	1½-2½	
3690.261	C	40	0.26	3.61	½-1½	
6116.60	A	200W	1.06	2.60	3½-3½	a^4D-z^4D^o
6161.06	A	150w	1.06	2.57	2½-2½	(30)
8186.73	A	100	1.05	2.55	1½-1½	
6196.67	A	60	1.04	2.54	½- ½	
6253.51	A	100w	1.06	2.57	3½-2½	
6255.90	A	100	1.06	2.55	2½-1½	
6241.61	A	60	1.05	2.54	1½- ½	
8027.36	A	100w	1.06	2.60	2½-3½	
6093.48	A	100w	1.05	2.57	1½-2½	
8144.58	A	50	1.04	2.55	½-1½	
6753.00	A	80w	1.06	2.90	3½-4½	a^4D-z^4F^o
6766.49	A	60	1.06	2.86	2½-3½	(31)
6764.96	A	40	1.05	2.87	1½-2½	
6812.40	A	30	1.04	2.85	½-1½	
6629.94	A	10	1.06	2.88	3½-3½	
6832.44	A	10	1.06	2.87	2½-2½	
6841.89	A	7	1.05	2.85	1½-1½	
6466.97	A	2	1.05	2.95	1½-2½	a^4D-z^2D^o †
6576.96	A	2	1.04	2.91	½-1½	(32)
8097.42	A	(1)	1.06	3.10	3½-4½	a^4D-y^6F^o †
8090.54	P		1.06	3.09	2½-3½	(33)
6087.485	A	1	1.05	3.07	1½-2½	
6089.473	A	(3)	1.04	3.07	½-1½	
•6151.509	B	(1)	1.06	3.07	2½-1½	
6126.30	A	2	1.05	3.06	1½- ½	
6090.164	A	50	1.06	3.10	3½-2½	a^4D-z^4P^o
6119.505	A	40	1.06	3.06	2½-1½	(34)
6135.36	A	15	1.05	3.06	1½- ½	
6039.690	A	25	1.06	3.10	2½-2½	
6061.431	A	25	1.05	3.08	1½-1½	
6111.622	A	25	1.04	3.06	½- ½	
6002.601	A	4	1.05	3.10	1½-2½	
6058.113	A	5	1.04	3.08	½-1½	
5727.024	A	60	1.06	3.23	3½-4½	a^4D-y^4F^o
5696.509	A	40	1.06	3.22	2½-3½	(35)
5703.562	A	40	1.05	3.21	1½-2½	
5706.973	A	30	1.04	3.20	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
5743.436	A	16	1.06	3.22	3½-3½	a^4D-y^4F^o
5737.040	A	25	1.06	3.21	2½-2½	cont
5727.662	A	20	1.05	3.20	1½-1½	
•5782.601	A	2	1.08	3.21	3½-2½	
5761.411	A	2	1.06	3.20	2½-1½	
5670.827	A	30w	1.06	3.25	3½-4½	a^4D-z^2G^o
5731.257	A	30	1.06	3.21	2½-3½	(36)
5776.670	A	4	1.06	3.21	3½-3½	
5627.628	A	30	1.08	3.27	3½-3½	a^4D-y^4D^o
5624.605	A	20	1.06	3.25	2½-2½	(37)
5624.695	A	10	1.05	3.24	1½-1½	
5626.014	A	6	1.04	3.23	½- ½	
5668.369	A	12	1.08	3.25	3½-2½	
5657.449	A	12	1.06	3.24	2½-1½	
5646.112	A	10	1.05	3.23	1½- ½	
5564.490	A	10	1.06	3.27	2½-3½	
5592.409	A	12	1.05	3.25	1½-2½	
5604.943	A	8	1.04	3.24	½-1½	
5547.080	A	8	1.06	3.30	3½-4½	a^4D-y^6D^o †
5545.933	A	2	1.06	3.26	2½-3½	(36)
5544.665	C	(1)	1.05	3.27	1½-2½	
4670.483	A	25w	1.06	3.72	3½-2½	a^4D-y^4P^o
4646.396	A	15w	1.06	3.72	2½-1½	(39)
4640.062	A	6	1.05	3.71	1½- ½	
4640.735	A	7w	1.06	3.72	2½-2½	
4624.404	A	8	1.05	3.72	1½-1½	
4626.480	A	7	1.04	3.71	½- ½	
4616.600	A	(2)	1.05	3.72	1½-2½	
4610.925	A	2	1.04	3.72	½-1½	
4423.212	C	6	1.08	3.87	3½-4½	a^4D-x^4F^o †
•4406.147	C	6	1.06	3.86	2½-3½	(40)
4393.835	C	4	1.05	3.86	1½-2½	
4367.213	C	3	1.04	3.85	½-1½	
4090.579	C	25	1.06	4.09	3½-4½	a^4D-w^4F^o †
4095.486	C	25	1.06	4.07	2½-3½	(41)
4102.159	C	20	1.05	4.06	1½-2½	
m4109.61	P	V	1.04	4.04	½-1½	
4118.643	C	6	1.08	4.07	3½-3½	
4119.457	C	6	1.06	4.06	2½-2½	
4120.538	C	8	1.05	4.04	1½-1½	
3934.013	C	20	1.06	4.31	3½-3½	a^4D-w^4D^o
3922.431	C	12	1.06	4.31	2½-2½	(42)
3920.487	C	5	1.05	4.19	1½-1½	
•3912.207	C	10	1.04	4.19	½- ½	
3943.664	C	12	1.06	4.31	3½-2½	
3936.282	C	5	1.06	4.19	2½-1½	
3921.905	C	6	1.05	4.19	1½- ½	
3918.866	C	4	1.06	4.21	2½-3½	
•3906.748	C	6	1.05	4.21	1½-2½	
3910.790	C	5	1.04	4.19	½-1½	
•3672.748	C	4n	1.08	4.36	3½-4½	a^4D-v^4F^o
3875.426	C	3	1.06	4.24	2½-3½	(43)
3691.227	B	2	1.05	4.23	1½-2½	
3902.558	C	3	1.04	4.20	½-1½	
•3696.155§	E	6	1.06	4.24	3½-3½	
•3906.748	C	6	1.06	4.23	2½-2½	
•3912.207	C	10	1.05	4.20	1½-1½	
m3640.44	P	Fe	1.06	4.29	3½-3½	a^4D-v^4D^o
3839.002	C	10	1.06	4.27	2½-2½	(44)
3836.054	C	5	1.05	4.26	1½-1½	
3835.560	C	4	1.04	4.26	½- ½	
3859.341	C	6	1.06	4.27	3½-2½	
3851.171	C	5	1.06	4.26	2½-1½	
3844.692	C	4	1.05	4.26	1½- ½	
3820.299	B	(4)	1.06	4.29	2½-3½	
3823.990	C	5	1.05	4.27	1½-2½	
3828.774	C	6	1.04	4.26	½-1½	
3563.704	C	8	1.06	4.52	3½-2½	a^4D-x^4P^o †
3540.530	C	1	1.06	4.54	2½-1½	(45)
3542.657	C	1	1.05	4.53	1½- ½	
•3566.177§	E	4	1.06	4.52	2½-2½	
3400.395	C	12	1.06	4.71	3½-3½	a^4D-t^4D^o †
3402.571	C	9	1.06	4.69	2½-2½	(46)
3405.160	C	6	1.05	4.67	1½-1½	
3406.837	C	6	1.04	4.66	½- ½	
3002.65	C	6	1.06	5.19	3½-2½	a^4D-v^4P^o †
3004.624	C	10	1.06	5.17	2½-1½	(47)
6531.44	A	15	1.21	3.10	2½-2½	a^4P-z^4P^o
6543.51	A	5	1.19	3.08	1½-1½	(48)
6565.88	A	3	1.18	3.06	½- ½	
6624.86	A	7	1.21	3.06	2½-1½	
6605.96	A	10	1.19	3.06	1½- ½	
6458.354	A	10	1.19	3.10	1½-2½	
6504.164	A	9	1.18	3.08	½-1½	
6002.373	A	2	1.21	3.27	2½-3½	a^4P-y^4D^o
5980.748	A	2	1.19	3.25	1½-2½	(49)
5964.602	A	1	1.18	3.24	½-1½	
6048.636	A	tr	1.21	3.25	2½-2½	
6017.90	A	tr	1.19	3.24	1½-1½	
6006.648	A	tr	1.18	3.23	½- ½	
6086.55	A	(2)	1.21	3.24	2½-1½	
4925.657	A	10	1.21	3.72	2½-2½	a^4P-y^4P^o
4886.821	A	2	1.19	3.72	1½-1½	(50)
4882.163	A	2	1.18	3.71	½- ½	
4932.089	A	4	1.21	3.72	2½-1½	
4904.265	A	(6)	1.19	3.71	1½- ½	
4880.560	A	6	1.19	3.72	1½-2½	
4864.63	P		1.18	3.72	½-1½	
4758.742	A	2	1.21	3.81	2½-2½?	a^4P-z^6S^o
4716.644	A	(1-)	1.19	3.81	1½-2½?	(51)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
4113.516	C	12	1.21	4.21	2½-3½	a^4P-w^4D^o †
4093.407	C	6	1.19	4.21	1½-2½	(52)
4091.945	C	3	1.18	4.19	½-1½	
4124.072	C	5	1.21	4.21	2½-2½	
4107.487	C	4	1.19	4.19	1½-1½	
4093.497	C	5	1.18	4.19	½- ½	
3533.676	C	10	1.21	4.71	2½-3½	a^4P-t^4D^o
3529.735	C	10	1.19	4.69	1½-2½	(53)
3533.757	C	6	1.16	4.67	½-1½	
3553.271	C	6	1.21	4.69	2½-2½	
3545.339	C	6	1.19	4.67	1½-1½	
3543.500	C	8	1.16	4.66	½- ½	
3569.063	C	1	1.21	4.67	2½-1½	
3555.142	C	3	1.19	4.66	1½- ½	
3377.625	C	15	1.21	4.87	2½-2½	a^4P-w^4P^o
3376.057	C	6	1.19	4.85	1½-1½	(54)
3366.680	C	4	1.18	4.84	½- ½	
3397.580	C	6	1.21	4.85	2½-1½	
3377.394	C	10	1.19	4.84	1½- ½	
3356.352	C	10	1.19	4.87	1½-2½	
3365.553	C	10	1.18	4.85	½-1½	
3329.855	C	12	1.21	4.92	2½-1½	a^4P-x^4S^o
3309.176	C	6	1.19	4.92	1½-1½	(55)
3299.066	C	3	1.18	4.92	½-1½	
3106.11	C	5	1.21	5.19	2½-2½	a^4P-v^4P^o
3103.60	F	1	1.19	5.17	1½-1½	(56)
3103.994	C	6	1.18	5.15	½- ½	
3121.749	C	4	1.21	5.17	2½-1½	
3118.925	C	8	1.19	5.15	1½- ½	
3086.114	C	30	1.19	5.19	1½-2½	
3094.692	C	20	1.18	5.17	½-1½	
3083.539	C	30	1.21	5.22	2½-3½	a^4P-r^4D^o
3075.933	C	8	1.19	5.20	1½-2½	(57)
3080.333	C	12	1.18	5.18	½-1½	
3093.792	C	25	1.21	5.20	2½-2½	
3069.130	C	25	1.19	5.16	1½-1½	
3067.065	C	15	1.18	5.18	½- ½	
3107.142	B	5	1.21	5.16	2½-1½	
3095.902	C	5	1.19	5.16	1½- ½	
3016.16	C	20	1.21	5.30	2½-1½	a^4P-w^4S^o
2999.238	C	12	1.19	5.30	1½-1½	(58)
2990.948	C	8	1.18	5.30	½-1½	
6558.02	A	5	1.37	3.25	4½-4½	a^2G-z^2G^o
6607.82	A	3	1.34	3.21	3½-3½	(59)
6106.967	A	2	1.37	3.39	4½-3½	a^2G-z^2F^o
6135.07	A	2	1.34	3.36	3½-2½	(60)
4609.646	A	4	1.37	4.05	4½-4½	a^2G-z^4H^o
4585.94	G	2	1.34	4.04	3½-3½	(61)
4501.972	A	6	1.37	4.11	4½-4½	a^2G-y^2G^o
4449.573	C	5	1.34	4.12	3½-3½	(62)
4491.164	C	2	1.37	4.12	4½-3½	
m4460.16	P	V	1.34	4.11	3½-4½	
3930.023	C	10	1.37	4.51	4½-4½	a^2G-x^2G^o
•3909.694	C	20	1.34	4.50	3½-3½	(63)
3942.006	C	6	1.37	4.50	4½-3½	
3698.143	B	(47)	1.34	4.51	3½-4½	
3886.587	C	6	1.37	4.55	4½-3½	a^2G-w^4G^o †
3864.300	B	(3)	1.34	4.54	3½-2½	(64)
3865.770	C	2	1.37	4.55	4½-4½	a^2G-w^2G^o †
3884.465	C	4	1.34	4.52	3½-3½	(65)
3871.076	C	8	1.37	4.56	4½-3½	a^2G-x^2F^o
•3863.666§	C	6	1.34	4.54	3½-2½	(66)
3840.140	C	4	1.34	4.56	3½-3½	
3828.636	C	4	1.37	4.59	4½-5½	a^2G-y^2H^o
3802.863	C	2	1.34	4.59	3½-4½	(67)
3833.226	C	3	1.37	4.59	4½-4½	
3806.796	C	8	1.37	4.61	4½-4½	a^2G-v^2G^o †
3803.764	C	6	1.34	4.59	3½-3½	(68)
3790.469	C	8	1.37	4.63	4½-3½	a^2G-w^2F^o †
3779.648	C	4	1.34	4.61	3½-2½	(69)
3686.862	C	8	1.37	4.72	4½-5½	a^2G-x^2H^o
3671.205	C	10	1.34	4.71	3½-4½	(70)
3699.476	C	3	1.37	4.71	4½-4½	
3264.360	C	6	1.37	5.13	4½-4½	a^2G-t^2G^o †
3273.027	C	7	1.34	5.12	3½-3½	(71)
3233.190	C	6	1.37	5.19	4½-3½	a^2G-u^2F^o †
3216.869	C	5	1.34	5.16	3½-2½	(72)
3212.434	C	15	1.37	5.21	4½-5½	a^2G-u^2H^o †
3205.562	C	15	1.34	5.19	3½-4½	(73)
3050.400	C	25	1.37	5.42	4½-3½	a^2G-t^2F^o
3031.007	C	10†	1.34	5.42	3½-2½	(74)
3021.76	C	6	1.37	5.45	4½-5½	a^2G-t^2H^o
3006.35	C	6	1.34	5.45	3½-4½	(75)
9865.44	A	10	1.70	2.95	1½-2½	a^2P-z^2D^o
10203.45	A	10	1.70	2.91	½-1½	(76)
10193.66	A	5	1.70	2.91	1½-1½	
5558.752	A	3	1.70	3.92	1½- ½	a^2P-z^2S^o
5561.670	A	2	1.70	3.92	½- ½	(77)
4833.027	A	3	1.70	4.26	1½-2½	a^2P-y^2D^o †
•4848.631	A	1	1.70	4.25	½-1½	(78)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
4365.745	C	3	1.70	4.53	1½-2½	a^2P-x^2D^o
*4422.477	C	2	1.70	4.50	½-1½	(79)
*3798.661	C	2	1.70	4.95	1½-2½	a^2P-v^2D^o
m3834.22	P	Fe	1.70	4.92	½-1½	(80)
3832.835	C	4	1.70	4.92	1½-1½	
3505.690	C	6	1.70	5.22	1½-1½	a^2P-v^2P^o
3487.008	D	2	1.70	5.24	½- ½	(81)
3485.867	B	6	1.70	5.24	1½- ½	
3506.843	C	3	1.70	5.22	½-1½	
4537.663	A	6	1.80	4.52	2½-1½	a^2D-y^2P^o
4551.860	A	3	1.79	4.50	1½- ½	(82)
3639.024	C	6	1.80	5.19	2½-3½	a^2D-u^2F^o †
3643.864	C	5	1.79	5.18	1½-2½	(83)
6326.845	A	6	1.86	3.81	6½-5½	a^4H-y^4G^o †
6339.090	A	5	1.85	3.80	5½-4½	(84)
6349.477	A	5	1.85	3.79	4½-3½	
6357.297	A	4	1.84	3.78	3½-2½	
5584.738	A	(3)	1.86	4.07	6½-6½	a^4H-z^4H^o †
5586.007	A	2	1.85	4.06	5½-5½	(85)
*5604.205	A	1	1.85	4.05	4½-4½	
5622.075	A	(2)	1.84	4.04	3½-3½	
4501.256	B	1	1.85	4.59	5½-5½	a^4H-y^3H^o
4496.864	A	5	1.85	4.59	4½-4½	(86)
4490.815	A	5	1.85	4.59	4½-5½	
*4488.898	A	20	1.84	4.59	3½-4½	
4452.008	C	20	1.86	4.63	6½-7½	a^4H-z^4I^o †
4462.363	C	20	1.85	4.62	5½-6½	(87)
4469.710	C	15	1.85	4.61	4½-5½	
4468.010	C	8	1.84	4.60	3½-4½	
4268.643	C	20	1.86	4.75	6½-6½	a^4H-x^4H^o †
4271.554	C	12	1.85	4.74	5½-5½	(88)
4276.958	C	12	1.85	4.73	4½-4½	
4284.055	C	15	1.84	4.72	3½-3½	
3998.730	C	15	1.86	4.95	6½-5½	a^4H-u^4G^o †
3992.801	C	12	1.85	4.94	5½-4½	(89)
*3990.566	C	20	(1.85 1.84	4.94 4.93	4½-3½ 3½-2½	
3988.833	C	5	1.85	4.95	5½-5½	
3984.600	C	6	1.85	4.94	4½-4½	
3984.335	C	6	1.84	4.94	3½-3½	
3924.658	C	10	1.86	5.00	6½-6½	a^4H-w^4H^o †
3927.926	C	(3)	1.85	4.99	5½-5½	(90)
3931.340	C	5	1.85	4.98	4½-4½	
3935.141	C	6	1.84	4.98	3½-3½	
*3722.601	C	(3)	1.86	5.17	6½-5½	a^4H-t^4G^o †
3721.998	C	4	1.85	5.17	5½-4½	(91)
3729.035	C	4	1.85	5.16	4½-3½	
3737.992	C	5	1.84	5.14	3½-2½	
5772.402	A	6	1.92	4.06	2½-3½	b^4P-x^4D^o †
*5748.860	A	4	1.89	4.03	1½-2½	(92)
5752.711	A	3	1.86	4.01	½-1½	
5850.286	A	2	1.92	4.03	2½-2½	
5817.063	A	3	1.89	4.01	1½-1½	
5788.549	A	3	1.86	3.99	½- ½	
4797.973	A	2	1.92	4.49	2½-1½	b^4P-y^4S^o
4729.544	A	6	1.89	4.49	1½-1½	(93)
4686.926	A	6	1.86	4.49	½-1½	
4751.574	A	6	1.92	4.52	2½-2½	b^4P-x^4P^o
4640.309	B	(0)	1.89	4.54	1½-1½	(94)
4624.657	B	(1)	1.86	4.53	½- ½	
4706.178	A	8	1.92	4.54	2½-1½	
4666.149	A	4	1.89	4.53	1½- ½	
4684.457	A	(3)	1.89	4.52	1½-2½	
4591.991	B	(0)	1.92	4.61	2½-2½	b^4P-w^2F^o
4529.301	A	4	1.89	4.61	1½-2½	(95)
4071.541	C	8	1.92	4.95	2½-3½	b^4P-s^4D^o †
4042.635	C	5	1.89	4.94	1½-2½	(96)
4021.925	C	3	1.86	4.93	½-1½	
*3781.393	C	3	1.92	5.19	2½-2½	b^4P-v^4P^o
3761.442	C	3	1.89	5.17	1½-1½	(97)
*3747.982	C	8n	1.86	5.15	½- ½	
3804.589	C	3	1.92	5.17	2½-1½	
3775.187	C	3	1.89	5.15	1½- ½	
3738.757	C	8	1.89	5.19	1½-2½	
3734.428	C	5	1.86	5.17	½-1½	
*3747.982	C	8n	1.92	5.22	2½-3½	b^4P-r^4D^o †
3720.93	G	1	1.89	5.20	1½-2½	(98)
3713.56	G	1	1.86	5.18	½-1½	
3763.141	C	6	1.92	5.20	2½-2½	
3740.241	C	6	1.89	5.18	1½-1½	
3723.324	C	3	1.86	5.18	½- ½	
4524.218	A	15	1.88	4.61	5½-4½	a^2H-v^2G^o †
4529.589	A	8	1.86	4.59	4½-3½	(99)
4515.558	A	2	1.88	4.62	5½-6½	a^2H-z^4I^o
4540.014	A	6	1.88	4.60	5½-4½	(100)
4474.714	C	12	1.88	4.64	5½-6½	a^2H-z^2I^o
4457.759	C	8	1.86	4.63	4½-5½	(101)
4468.759	C	4	1.86	4.63	4½-3½	a^2H-w^2F^o (102)
V I continued						
4354.979	C	5	1.88	4.72	5½-5½	a^2H-x^2H^o
4342.832	C	6	1.86	4.71	4½-4½	(103)
3708.721	C	6	1.88	5.21	5½-5½	a^2H-u^2H^o
3706.035	C	4	1.86	5.19	4½-4½	(104)
3082.010	B	6	1.88	5.89	5½-5½	a^2H-s^2H^o
3075.369	C	10	1.86	5.88	4½-4½	(105)
9611.60	A	80	1.95	3.23	4½-4½	b^4F-y^4F^o
9614.68	A	50	1.94	3.22	3½-3½	(106)
9691.58	A	40	1.94	3.21	2½-2½	
9738.50	A	15	1.93	3.20	1½-1½	
9582.28	A	6np	1.94	3.22	2½-3½	
9668.9	A	3p?	1.93	3.21	1½-2½	
6430.471	A	5	1.95	3.87	4½-4½	b^4F-x^4F^o †
6431.630	A	4	1.94	3.86	3½-3½	(107)
6433.17	A	3	1.94	3.86	2½-2½	
6435.148	A	2	1.93	3.85	1½-1½	
4732.877	A	8	1.95	4.56	4½-5½	b^4F-w^4G^o †
4731.524	A	6	1.94	4.56	3½-4½	(108)
4730.394	A	3	1.94	4.55	2½-3½	
4545.394	A	25·	1.95	4.66	4½-5½	b^4F-v^4G^o
4560.710	A	20	1.94	4.65	3½-4½	(109)
4571.783	A	15	1.94	4.64	2½-3½	
4578.728	A	15	1.93	4.63	1½-2½	
4570.425	A	6	1.95	4.65	4½-4½	
4579.198	A	7	1.94	4.64	3½-3½	
4583.783	A	5	1.94	4.63	2½-2½	
4474.045	C	10	1.95	4.71	4½-3½	b^4F-t^4D^o
4496.062	A	8	1.94	4.69	3½-2½	(110)
4514.191	A	6	1.94	4.67	2½-1½	
4525.168	A	5	1.93	4.66	1½- ½	
4464.747	C	2	1.94	4.71	3½-3½	
*4488.898	A	20	1.94	4.69	2½-2½	
4509.287	A	3	1.93	4.67	1½-1½	
4232.460	C	15	1.95	4.86	4½-4½	b^4F-u^4F^o †
4232.952	C	12	1.94	4.86	3½-3½	(111)
*4234.000	C	12	1.94	4.85	2½-2½	
4235.756	C	10	1.93	4.85	1½-1½	
4104.778	C	15	1.95	4.95	4½-3½	b^4F-s^4D^o †
4118.183	C	8	1.94	4.94	3½-2½	(112)
4123.188	C	6	1.94	4.93	2½-1½	
4128.858	C	5	1.93	4.92	1½- ½	
4807.537	A	25	2.13	4.68	6½-5½	z^6G^o-e^6F †
4796.930	A	20	2.09	4.66	5½-4½	(113)
4786.515	A	20	2.07	4.64	4½-3½	
4776.364	A	10	2.05	4.63	3½-2½	
4766.635	A	10	2.03	4.62	2½-1½	
4757.50	A	8	2.02	4.61	1½- ½	
4757.37	A	4	2.09	4.68	5½-5½	
4753.957	A	7	2.07	4.66	4½-4½	
4750.990	A	8	2.05	4.64	3½-3½	
4748.525	A	7	2.03	4.63	2½-2½	
4746.638	A	5	2.02	4.62	1½-1½	
3695.335	C	30	2.12	5.46	6½-7½	z^6G^o-e^6H
3687.473	C	12?	2.09	5.44	5½-6½	(114)
3680.113	C	15	2.07	5.42	4½-5½	
3673.404	C	12	2.05	5.41	3½-4½	
3667.741	C	15	2.03	5.40	2½-3½	
3663.594	C	15	2.02	5.39	1½-2½	
3717.55	G	1	2.12	5.44	6½-6½	
3705.83	G	1	2.09	5.42	5½-5½	
*3694.622	C	3	2.07	5.41	4½-4½	
3684.332	C	3	2.05	5.40	3½-3½	
3675.497	C	3	2.03	5.39	2½-2½	
3676.684	C	10	2.12	5.47	6½-6½	z^6G^o-f^6G †
3672.403	C	8	2.09	5.45	5½-5½	(115)
3665.142	C	8	2.07	5.43	4½-4½	
3656.706	C	6	2.05	5.42	3½-3½	
*3648.966	C	5	2.03	5.41	2½-2½	
3641.096	C	4	2.02	5.41	1½-1½	
3014.37	C	15N	2.12	6.21	6½-7½	z^6G^o-f^6H
3006.90	F	5N	2.09	6.19	5½-6½	(116)
3006.24	F	5N	2.07	6.17	4½-5½	
3001.90	F	10N	2.05	6.16	3½-4½	
2997.87	F	5N	2.03	6.15	2½-3½	
2997.08	F	3N	2.02	6.14	1½-2½	
7338.92	A	30	2.13	3.81	5½-5½	a^4G-y^4G^o †
7356.51	A	20	2.12	3.80	4½-4½	(117)
7363.16	A	15	2.11	3.79	3½-3½	
7361.39	A	10	2.11	3.78	2½-2½	
4904.350	B	(9)	2.13	4.64	5½-6½	a^4G-y^4H^o †
4904.447	B	(7)	2.12	4.64	4½-5½	(118)
4900.624	A	6	2.11	4.63	3½-4½	
4894.318	A	4	2.11	4.63	2½-3½	
4706.574	A	12	2.13	4.75	5½-6½	a^4G-x^4H^o †
4710.566	A	12	2.12	4.74	4½-5½	(119)
4714.113	A	10	2.11	4.73	3½-4½	
4717.692	A	10	2.11	4.72	2½-3½	
4291.816	C	15	2.13	5.00	5½-6½	a^4G-w^4H^o †
4296.107	C	15	2.12	4.99	4½-5½	(120)
4297.681	C	12	2.11	4.98	3½-4½	
4298.039	C	12	2.11	4.98	2½-3½	
*4051.352§	C	12	2.13	5.17	5½-5½	a^4G-t^4G^o †
*4050.963§	C	10	2.12	5.17	4½-4½	(121)
4057.074	C	10	2.11	5.16	3½-3½	
4063.931	C	10	2.11	5.14	2½-2½	
V I continued						
3571.037	C	4	2.13	5.58	5½-4½	a^4G-q^4F^o †
3573.516	C	5	2.12	5.57	4½-3½	(122)
3571.653	C	5	2.11	5.57	3½-2½	
3568.940	C	3	2.11	5.56	2½-1½	
5128.530	A	7	2.28	4.68	4½-5½	z^6D^o-e^6F †
5138.431	A	5	2.26	4.66	3½-4½	(123)
5148.724	A	4	2.25	4.64	2½-3½	
5159.350	A	3	2.24	4.63	1½-2½	
3741.504	C	6	2.28	5.57	4½-4½	z^6D^o-g^6D †
*3755.701	C	4	(2.28 2.26	5.56 5.55	4½-3½ 3½-2½	(124)
5193.004	A	7	2.31	4.68	5½-5½	z^6F^o-e^6F †
*5194.824	A	10	2.29	4.66	4½-4½	(125)
5195.394	A	5	2.27	4.64	3½-3½	
*5194.824	A	10	2.25	4.63	2½-2½	
3898.019	C	6	2.31	5.47	5½-6½	z^6F^o-f^6G †
3901.153	C	6	2.29	5.45	4½-5½	(126)
3900.175	C	6	2.27	5.43	3½-4½	
3897.075	C	6	2.25	5.42	2½-3½	
5748.412	A	(1)	2.37	4.53	1½-1½	b^2P-y^2P^o
5656.895	A	1	2.32	4.50	½- ½	(127)
*5782.601	A	2	2.37	4.50	1½- ½	
5624.223	A	(2)	2.32	4.52	½-1½	
4776.519	A	5	2.37	4.95	1½-2½	b^2P-v^2D^o †
4742.631	A	5	2.32	4.92	½-1½	(128)
5487.915	A	10	2.36	4.61	5½-4½	b^2H-v^2G^o
5507.753	A	8	2.35	4.59	4½-3½	(129)
5415.277	A	10	2.36	4.64	5½-6½	b^2H-z^2I^o †
*5401.945	A	8	2.35	4.63	4½-5½	(130)
5240.878	A	9	2.36	4.73	5½-5½	b^2H-x^2H^o †
5234.088	A	8	2.35	4.71	4½-4½	(131)
*5014.630	A	5	2.36	4.82	5½-6½	b^2H-y^2I^o †
5002.330	A	4	2.35	4.82	4½-5½	(132)
4591.220	A	12	2.36	5.05	5½-5½	b^2H-w^2H^o
4553.056	A	7	2.35	5.06	4½-4½	(133)
3237.409	C	4	2.36	6.19	5½-6½	b^2H-x^2I^o
3229.604	B	4	2.35	6.17	4½-5½	(134)
5725.633	A	6	2.36	4.51	3½-4½	a^2F-x^2G^o
5734.004	A	5	2.35	4.50	2½-3½	(135)
4705.099	A	4	2.36	4.98	3½-2½	a^2F-u^2D^o
4715.900	A	5	2.35	4.97	2½-1½	(136)
3645.596	C	3	2.36	5.74	3½-2½	a^2F-5^o (137)
*3265.899§	C	5	2.36	6.13	3½-3½	a^2F-t^2D^o †
3256.779	B	1	2.35	6.14	2½-1½	(138)
5266.118	A	(4)	2.67	5.01	4½-3½	b^2G-v^2F^o
*5401.945	A	8	2.67	4.96	3½-2½	(139)
4373.230	C	4	2.67	5.49	4½-4½	b^2G-s^2G^o †
4375.304	C	4	2.67	5.49	3½-3½	(140)
5784.360	A	5	2.75	4.89	5½-4½	z^4G^o-f^4F
*5786.153	A	7	(2.73 2.71	4.86 4.84	4½-3½ 3½-2½	(141)
5783.509	A	2	2.70	4.83	2½-1½	
5846.306	A	8	3.12	5.23	5½-6½	y^6F^o-e^6G †
5830.719	A	7	3.10	5.22	4½-5½	(142)
5817.532	A	5	3.09	5.21	3½-4½	
5807.14	A	3	3.07	5.20	2½-3½	
5798.905	A	2	3.07	5.19	1½-2½	
5797.352	A	(1-)	3.06	5.19	½-1½	

Strongest Unclassified Lines of V I

4619.648	A	8	IV
4549.644	A	10	IV
4527.990	A	5	IV
4265.170	C	8n	III
*3963.626§	C	4	II
3898.278	C	5	II
3891.119	C	4	II
3849.324	C	6	I
3845.974	C	3	II
3425.070	C	6	II
3261.081	C	6	III
3156.222	C	10	IV
3153.549	C	5N	IV
3150.568	C	5	IV
3092.72	G	8	III
3041.86	C	8	IV
3002.442	C	6	IV

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V II I P 14.1 Anal A List A Jan 1941						
3093.108//	A	2500R	0.39	4.38	5-6	$a^5F-z^5G^o$ (1)
3102.295	A	2000R	0.37	4.34	4-5	
3110.708	A	1500R	0.35	4.31	3-4	
3118.376	A	1000R	0.33	4.29	2-3	
3125.282	A	800R	0.32	4.27	1-2	
3121.138	A	80	0.39	4.34	5-5	
3128.215	A	150R	0.37	4.31	4-4	
3130.262	A	100R	0.35	4.29	3-3	
3133.329	A	150r	0.33	4.27	2-2	
•3145.337	A	30	0.39	4.31	5-4	
3145.971	A	20	0.37	4.29	4-3	
•3145.337	A	30	0.35	4.27	3-2	
2952.07	A	150	0.35	4.53	3-2	$a^5F-z^5F^o$ †
2957.520	A	100	0.33	4.50	2-1	(2)
3831.017	A	6	1.12	4.34	4-5	$a^3F-z^5G^o$
3829.655	A	5	1.09	4.31	3-4	(3)
3829.53	A	4	1.07	4.29	2-3	
3852.10	A	4	1.07	4.27	2-2	
3538.238	A	50	1.12	4.61	4-5	$a^3F-z^5F^o$
3531.48	A	10	1.09	4.59	3-4	(4)
3535.18	P		1.07	4.56	2-3	
3563.71	A	3n	1.12	4.59	4-4	
3560.594	A	90	1.09	4.56	3-3	
•3566.177§	A	200	1.07	4.53	2-2	
3593.323	A	600	1.12	4.56	4-3	
3592.012	A	800	1.09	4.53	3-2	
3589.745	A	1000	1.07	4.50	2-1	
3556.800	A	1500	1.12	4.59	4-3	$a^3F-z^3D^o$
3545.190	A	1000	1.09	4.57	3-2	(5)
3530.765	A	500	1.07	4.56	2-1	
3524.713	A	200	1.09	4.59	3-3	
3520.022	A	120	1.07	4.57	2-2	
3499.833	A	20	1.07	4.59	2-3	
3516.00	A	5	1.12	4.63	4-4	$a^3F-z^5D^o$
3485.916	A	250	1.09	4.63	3-3	(6)
3479.837	A	80	1.07	4.81	2-2	
3517.298	A	800	1.12	4.63	4-3	
3504.432	A	400	1.09	4.81	3-2	
3493.163	A	150	1.07	4.60	2-1	
3484.65	A	3	1.09	4.63	3-4	
3461.580	A	5	1.07	4.83	2-3	
3278.12	A	1500R	1.12	4.89	4-5	$a^3F-z^3G^o$
3271.124	A	1200R	1.09	4.88	3-4	(7)
3287.709	A	1000R	1.07	4.84	2-3	
3298.738	A	130	1.12	4.86	4-4	
3289.391	A	100	1.09	4.84	3-3	
3317.295	A	2	1.12	4.84	4-3	
3190.686	A	500R	1.12	4.99	4-4	$a^3F-z^3F^o$
3188.523	A	300R	1.09	4.96	3-3	(8)
3187.717	A	200R	1.07	4.94	2-2	
3214.750	A	120	1.12	4.96	4-3	
3208.345	A	100	1.09	4.94	3-2	
3184.82	A	40	1.09	4.99	3-4	
3168.127	A	40	1.07	4.98	2-3	
3997.126	A	200	1.47	4.56	3-3	$a^3P-z^5F^o$
3973.642	A	300	1.42	4.53	1-2	(9)
3968.11	A	150	1.39	4.50	0-1	
4038.779	A	60	1.47	4.53	2-2	
4002.940	A	80	1.42	4.50	1-1	
4067.03	A	5	1.47	4.50	2-1	
3951.988	A	500	1.47	4.59	2-3	$a^3P-z^3D^o$
3916.418	A	200	1.42	4.57	1-2	(10)
•3896.155§	A	60	1.39	4.56	0-1	
3977.732	A	60	1.47	4.57	2-2	
3929.734	A	50	1.42	4.58	1-1	
3991.47	A	3	1.47	4.58	2-1	
3903.27	A	250	1.47	4.63	2-3	$a^3P-z^5D^o$
3888.744	A	60	1.42	4.61	1-2	(11)
3850.409	A	7	1.39	4.60	0-1	
3928.497	A	10	1.47	4.81	2-2	
3883.308	A	5	1.42	4.60	1-1	
3943.48	P		1.47	4.60	2-1	
3891.98	P		1.42	4.59	1-0	
3534.14	A	2	1.47	4.98	2-3	$a^3P-z^3F^o$ (12)
4389.12	P		1.57	4.38	6-6	$a^3H-z^5G^o$
4429.11	P		1.58	4.34	5-5	(13)
4463.76	P		1.55	4.31	4-4	
4445.77	P		1.57	4.34	6-5	
4478.03	P		1.56	4.31	5-4	
4503.13	P		1.55	4.29	4-3	
4372.88	P		1.58	4.38	5-8	
4414.17	P		1.55	4.34	4-5	
4058.270	A	7	1.57	4.81	6-5	$a^3H-z^5F^o$
4075.66	A	3	1.56	4.59	5-4	(14)
3715.478	A	1200 l	1.57	4.89	6-5	$a^3H-z^3G^o$
3732.760	A	800 l	1.58	4.88	5-4	(15)
3745.808	A	800	1.55	4.84	4-3	
3703.832	A	7	1.56	4.89	5-5	
•3722.16§	A	10	1.55	4.88	4-4	
4737.59	A	1	1.67	4.27	2-2	$b^3F-z^5G^o$ (18)
4388.78	A	5?	1.68	4.56	4-3	$b^3F-z^5F^o$
4382.02	A	4	1.67	4.53	3-2	(17)
4346.89	A	3	1.67	4.50	2-1	
4238.82	A	4	1.68	4.58	4-3	$b^3F-z^3D^o$
4254.41	A	15n	1.67	4.57	3-2	(18)
•4260.75	A	9n	1.67	4.56	2-1	
4179.082	A	3	1.88	4.63	4-4	$b^3F-z^5D^o$
4180.86	A	6?	1.68	4.63	4-3	(19)
4195.83	A	1	1.67	4.61	3-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V II continued						
m3844.48	P	V	1.68	4.89	4-5	$b^3F-z^3G^o$
3865.72	A	5	1.67	4.88	3-4	(20)
3883.43	A	2	1.87	4.84	2-3	
3875.67	A	5	1.68	4.86	4-4	
3891.25	A	4	1.67	4.84	3-3	
3901.33	P		1.68	4.84	4-3	
3727.351	A	1000 l	1.68	4.99	4-4	$b^3F-z^3F^o$
3750.88	A	600	1.67	4.96	3-3	(21)
3770.974	A	400	1.67	4.94	2-2	
3760.24	A	140	1.68	4.96	4-3	
3778.357	A	100	1.67	4.94	3-2	
3718.159	A	60	1.67	4.99	3-4	
3743.610	A	40	1.67	4.96	2-3	
•2983.009	A	10	1.67	5.81	3-4	$b^3F-z^3H^o$ † (22)
4270.64	A	2	1.70	4.59	3-4	$a^5P-z^5F^o$
4288.13	A	3	1.88	4.56	2-3	(23)
4316.258	A	2	1.87	4.53	1-2	
4313.30	A	2	1.70	4.56	3-3	
4331.79	A	2	1.88	1.53	2-2	
•4260.75	A	9n	1.70	4.59	3-3	$a^5P-z^3D^o$
4263.838	A	4n	1.68	4.57	2-2	(24)
4264.50	A	1	1.67	4.56	1-1	
4234.351	A	7	1.68	4.59	2-3	
4248.820	A	4	1.67	4.57	1-2	
4202.350	A	150	1.70	4.83	3-4	$a^5P-z^5D^o$
4178.390	A	60	1.68	4.63	2-3	(25)
4190.40	A	15	1.67	4.81	1-2	
4204.20	A	20	1.70	4.83	3-3	
m4205.05	P	V+	1.68	4.61	2-2	
4209.74	A	10	1.67	4.60	1-1	
4231.165	A	4	1.70	4.61	3-2	
4224.51	A	10	1.68	4.60	2-1	
4220.047	A	10	1.67	4.59	1-0	
3029.56	A	7	1.70	5.77	3-2	$a^5P-z^3P^o$
3020.65	A	6	1.68	5.76	2-1	(26)
3022.57	A	40	1.67	5.75	1-0	
3016.14	A	15	1.68	5.77	2-2	
3013.102	A	80	1.67	5.76	1-1	
3008.610	A	70	1.67	5.77	1-2	
3001.303	A	200	1.70	5.81	3-3	$a^5P-z^5P^o$
3003.461	A	80	1.68	5.79	2-2	(27)
3007.296	A	15	1.67	5.77	1-1	
3016.775	A	120	1.70	5.79	3-2	
3014.822	A	100	1.68	5.77	2-1	
2988.027	A	80	1.68	5.81	2-3	
2995.999	A	60	1.67	5.79	1-2	
2968.373	A	200	1.70	5.85	3-4	$a^5P-y^5D^o$
2978.517	A	100	1.68	5.82	2-3	(28)
2976.197	A	60	1.67	5.81	1-2	
2989.594	A	40	1.70	5.82	3-3	
2983.558	A	80n	1.68	5.81	2-2	
2975.650	A	50	1.67	5.82	1-1	
2998.70	A	3	1.70	5.81	3-2	
•2983.009	A	10	1.68	5.82	2-1	
2982.75	A	40	1.87	5.81	1-0	
4799.94	P		1.81	4.38	5-6	$a^3G-z^5G^o$
4844.31	P		1.80	4.34	4-5	(29)
4880.30	P		1.79	4.31	3-4	
4887.79	P		1.81	4.34	5-5	
4902.89	P		1.80	4.31	4-4	
4928.62	P		1.79	4.29	3-3	
4936.94	P		1.81	4.31	5-4	
4951.86	P		1.80	4.29	4-3	
4966.08	P		1.79	4.27	3-2	
4404.68	A	2	1.81	4.61	5-5	$a^3G-z^5F^o$
4424.62	P		1.80	4.59	4-4	(30)
4451.61	P		1.79	4.56	3-3	
4444.20	P		1.81	4.59	5-4	
4470.39	P		1.80	4.58	4-3	
4500.86	P		1.79	4.53	3-2	
4385.45	P		1.80	4.61	4-5	
4406.22	P		1.79	4.59	3-4	
4370.27	A	3	1.81	4.63	5-4	$a^3G-z^5D^o$ (31)
4005.712	A	800	1.81	4.89	5-5	$a^3G-z^3G^o$
4023.388	A	600	1.80	4.86	4-4	(32)
4035.631	A	400	1.79	4.84	3-3	
4039.574	A	20	1.81	4.86	5-4	
•4051.06§	A	20	1.80	4.84	4-3	
3989.803	A	15	1.80	4.89	4-5	
4008.17	A	20	1.79	4.88	3-4	
3878.715	A	300	1.81	4.99	5-4	$a^3G-z^3F^o$
3899.140	A	200	1.80	4.98	4-3	(33)
3914.333	A	250	1.79	4.94	3-2	
•3883.81§	A	80	1.80	4.99	4-4	
3884.847	A	50	1.79	4.98	3-3	
3849.758	A	3	1.79	4.99	3-4	
3033.821	A	300	1.81	5.88	5-6	$a^3G-z^3H^o$
3053.39	A	200	1.80	5.84	4-5	(34)
3067.104	A	200	1.79	5.81	3-4	
3062.702	A	20	1.81	5.84	5-5	
3078.018	A	25	1.80	5.81	4-4	
3085.47	A	1	1.81	5.81	5-4	
4810.17	A	1?	2.03	4.59	4-3	$b^3G-z^3D^o$ (35)
4331.55	A	8n	2.04	4.89	5-5	$b^3G-z^3G^o$
4349.97	A	8n	2.03	4.88	4-4	(38)
4366.91	A	5n	2.02	4.84	3-3	
4371.17	P		2.04	4.88	5-4	
4382.33	P		2.03	4.84	4-3	
4310.72	P		2.03	4.89	4-5	
4334.77	P		2.02	4.86	3-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V II continued						
4183.435	A	250	2.04	4.99	5-4	$b^3G-z^3F^o$
4205.080	A	250	2.03	4.96	4-3	(37)
4225.328	A	120	2.02	4.94	3-2	
4164.015	A	15	2.03	4.99	4-4	
4190.89	A	10	2.02	4.96	3-3	
4150.08	P		2.02	4.99	3-4	
•3217.121§	A	400	2.04	5.88	5-6	$b^3G-z^3H^o$
3237.876	A	350	2.03	5.84	4-5	(38)
•3254.773§	A	300	2.02	5.81	3-4	
3249.617	A	40	2.04	5.84	5-5	
3263.33	A	20	2.03	5.81	4-4	
m3093.16	P	V+	2.04	6.03	5-5	$b^3G-y^3G^o$
3094.196	A	100	2.03	6.02	4-4	(39)
3100.938	A	100	2.02	6.00	3-3	
3104.906	A	25	2.04	6.02	5-4	
3108.704	A	30	2.03	6.00	4-3	
3082.534	A	40	2.03	6.03	4-5	
3086.507	A	30	2.02	6.02	3-4	
3053.894	A	80	2.04	6.08	5-4	$b^3G-y^3F^o$
3048.891	A	70	2.03	6.08	4-3	(40)
3042.37	A	80	2.02	6.07	3-2	
•3043.54§	A	40	2.03	6.08	4-4	
3041.42	A	60	2.02	6.08	3-3	
3036.07	A	2	2.02	6.08	3-4	
3023.882	A	20	2.04	6.12	5-5	$b^3G-z^1H^o$ (41)
3015.98	A	10	2.03	6.12	4-3	$b^3G-z^1F^o$ (42)
3012.020	A	30	2.04	6.14	5-4	$b^3G-z^1G^o$
3001.93	A	2	2.03	6.14	4-4	(43)
2979.102	A	5	2.02	6.16	3-2	$b^3G-z^1D^o$ (44)
4606.59	P		2.21	4.89	4-5	$a^1G-z^3G^o$
4651.42	P		2.21	4.86	4-4	(45)
4688.45	P		2.21	4.84	4-3	
4439.42	A	1	2.21	4.99	4-4	$a^1G-z^3F^o$ (46)
3401.997	A	2	2.21	5.84	4-5	$a^1G-z^3H^o$ (47)
3230.919	A	4	2.21	6.03	4-5	$a^1G-y^3G^o$
3243.74	P		2.21	6.02	4-4	(48)
3259.684	A	3	2.21	6.00	4-3	
3188.10	A	30	2.21	6.08	4-4	$a^1G-y^3F^o$
•3193.97§	A	10?	2.21	6.08	4-3	(49)
3157.900	A	40	2.21	6.12	4-3	$a^1G-z^1F^o$ (50)
3155.409	A	60	2.21	6.12	4-5	$a^1G-z^1H^o$ (51)
3142.484	A	150	2.21	6.14	4-4	$a^1G-z^1G^o$ (52)
5318.61	P		2.27	4.59	3-4	$a^3D-z^5F^o$
5367.53	P		2.26	4.56	2-3	(53)
5432.09	A	2	2.26	4.53	1-2	
5384.89	A	8	2.27	4.56	3-3	
5439.30	A	15	2.26	4.53	2-2	
5487.00	A	8	2.26	4.50	1-1	
5457.10	A	4	2.27	4.53	3-2	
5494.35	P		2.26	4.50	2-1	
5303.26	A	40	2.27	4.59	3-3	$a^3D-z^3D^o$
5332.65	A	9	2.26	4.57	2-2	(54)
5350.37	A	5	2.26	4.56	1-1	
5349.75	A	3	2.27	4.57	3-2	
5357.35	A	2	2.26	4.56	2-1	
5286.42	P		2.26	4.59	2-3	
5325.71	P		2.26	4.57	1-2	
5213.08	P		2.27	4.63	3-4	$a^3D-z^5D^o$
5199.68	A	4	2.26	4.63	2-3	(55)
5234.28	P		2.26	4.61	1-2	
5215.928	A	25	2.27	4.63	3-3	
5240.97	P		2.26	4.61	2-2	
5264.49	P		2.26	4.60	1-1	
5257.51	P		2.27	4.61	3-2	
5271.28	P		2.26	4.60	2-1	
5280.62	P		2.26	4.59	1-0	
4528.51	A	300	2.27	4.99	3-4	$a^3D-z^3F^o$
4564.592	A	200	2.28	4.96	2-3	(56)
4600.19	A	150	2.26	4.94	1-2	
m4577.13	P	V	2.27	4.96	3-3	
4605.352	A	15	2.26	4.94	2-2	
4618.12	P		2.27	4.94	3-2	
3531.836	A	90	2.27	5.77	3-2	$a^3D-z^3P^o$
3520.547	A	15	2.26	5.76	2-1	(57)
3530.45	A	10	2.26	5.75	1-0	
3514.422	A	20	2.26	5.77	2-2	
3517.53	P		2.26	5.76	1-1	
3511.42	A	3	2.26	5.77	1-2	
3477.614	A	40	2.27	5.81	3-2	$a^3D-y^5D^o$
3469.528	A	50	2.26	5.82	2-1	(58)
3476.252	A	20	2.26	5.81	1-0	
3470.263	A	20	2.26	5.81	2-2	
3486.59	A	20	2.26	5.82	1-1	
3467.33	A	2	2.26	5.81	1-2	
3333.608	A	2	2.26	5.96	1-0	$a^3D-z^1S^o$ (59)
3291.04	A	5	2.27	8.02	3-4	$a^3D-y^3G^o$
3300.905	A	8	2.26	6.00	2-3	(60)
3307.445	A	2	2.27	6.00	3-3	
3233.772	A	80	2.27	6.08	3-4	$a^3D-y^3F^o$
3233.548	A	40	2.26	6.08	2-3	(61)
3231.952	A	80	2.26	6.07	1-2	
3239.833	A	8	2.27	6.08	3-3	
3234.504	A	10	2.26	6.07	2-2	
3240.785	A	1	2.27	6.07	3-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V II continued						
3202.711	A	2	2.37	6.12	3-3	$a^3D-z^1F^o$
3196.574	A	20	2.26	6.12	2-3	(62)
3186.86	A	10	2.27	6.14	3-4	$a^3D-z^1G^o$ (63)
3186.10	A	1	2.27	6.14	3-2	$a^3D-z^5S^o$ (64)
3169.21	A	2	2.27	6.16	3-2?	$a^3D-z^1D^o$
*3160.781	A	15	2.26	6.16	1-2	(65)
3050.735	A	15	2.27	6.31	3-2	$a^3D-y^3P^o$
3081.254	A	25	2.26	6.26	2-1	(66)
3086.210	A	10	2.26	6.25	1-0	
3078.948	A	5	2.26	6.26	1-1	
3054.24	A	7n	2.27	6.31	3-3	$a^3D-y^3D^o$
3048.65	A	4	2.26	6.31	2-3	(67)
3075.474	A	2	2.26	6.27	1-2	
4968.50	A	1	2.36	4.84	4-3	$b^1G-z^3G^o$ (68)
3547.07	A	5	2.36	5.84	4-5	$b^1G-z^3H^o$
3577.644	A	3	2.36	5.81	4-4	(69)
3361.506	A	60	2.36	6.03	4-5	$b^1G-y^3G^o$
3392.659	A	50	2.36	6.00	4-3	(70)
3315.176	A	50	2.36	6.08	4-4	$b^1G-y^3F^o$
3321.539	A	150	2.36	6.08	4-3	(71)
3282.534	A	150	2.36	6.12	4-3	$b^1G-z^1F^o$ (72)
3279.844	A	300	2.36	6.12	4-5	$b^1G-z^1H^o$ (73)
*3265.893§	A	100	2.36	6.14	4-4	$b^1G-z^1G^o$ (74)
3025.68	A	1	2.36	6.44	4-5	$b^1G-y^3H^o$
3032.187	A	3	2.36	6.43	4-4	(75)
3621.203	A	150	2.36	5.77	2-2	$b^3P-z^3P^o$
3632.126	A	15	2.37	5.76	1-1	(76)
3627.713	A	60	2.36	5.76	2-1	
3645.905	A	30	2.37	5.75	1-0	
3625.608	A	50	2.37	5.77	1-2	
3631.482	A	10	2.37	5.76	0-1	
3607.30	A	1	2.37	5.79	1-2	$b^3P-z^5P^o$
3623.03	A	1	2.37	5.77	0-1	(77)
3574.340	A	60	2.36	5.81	2-2	$b^3P-y^5D^o$
*3577.857§	A	20	2.37	5.82	1-1	(78)
3573.557	A	50	2.36	5.82	2-1	
3588.13	A	15	2.37	5.81	1-0	
3578.636	A	15	2.37	5.81	1-2	
3577.220	A	10	2.37	5.82	0-1	
3436.393	A	2	2.37	5.96	1-0	$b^3P-z^1S^o$ (79)
3394.92	A	1	2.36	6.00	2-3	$b^3P-y^3G^o$ (80)
3323.731	A	3	2.36	6.08	2-3	$b^3P-y^3F^o$ (81)
3249.464	A	4	2.36	6.16	2-2	$b^3P-z^1D^o$ (82)
3128.686	A	20	2.36	6.31	2-3	$b^3P-y^3D^o$
3162.714	A	30	2.37	6.27	1-2	(83)
3192.699	A	15	2.37	6.23	0-1	
3159.365	A	20	2.36	6.27	2-2	
3193.200	A	20	2.37	6.23	1-1	
3189.76	A	3	2.36	6.23	2-1	
3125.01	A	20	2.36	6.31	2-2	$b^3P-y^3P^o$
3166.39	A	8	2.37	6.26	1-1	(84)
3163.024	A	30	2.36	6.26	2-1	
3174.077	A	30	2.37	6.25	1-0	
3128.288	A	10	2.37	6.31	1-2	
3165.89	A	30	2.37	6.26	0-1	
3024.981	A	50	2.36	6.44	2-1	$b^3P-z^3S^o$
3028.042	A	50	2.37	6.44	1-1	(85)
3027.600	A	15	2.37	6.44	0-1	
3005.813	A	30	2.36	6.47	2-3	$b^3P-x^3F^o$
3022.146	A	4	2.37	6.45	1-2	(86)
3019.09	A	3	2.36	6.45	2-2	
2972.263	A	80	2.36	6.51	2-3	$b^3P-x^3D^o$
2981.200	A	70	2.37	6.51	1-2	(87)
2989.306	A	15	2.37	6.49	0-1	
2978.226	A	20	2.36	6.51	2-2	
2989.74	A	10	2.37	6.49	1-1	
3370.40	A	2	2.37	6.03	6-5	$a^1I-y^3G^o$ (88)
3288.324	A	20	2.37	6.12	6-5	$a^1I-z^1H^o$ (89)
6027.23	A	8	2.46	4.50	0-1	$a^1S-z^5F^o$ (90)
5862.80	A	15+p?	2.46	4.56	0-1	$a^1S-z^3D^o$ (91)
3731.983	A	20	2.46	5.76	0-1	$a^1S-z^3P^o$ (92)
3674.691	A	30	2.46	5.82	0-1	$a^1S-y^5D^o$ (93)
3270.115	A	10	2.46	6.23	0-1	$a^1S-y^3D^o$ (94)
3057.08	A	2	2.46	6.49	0-1	$a^1S-x^3D^o$ (95)
3038.520	A	30	2.46	6.52	0-1	$a^1S-z^1P^o$ (96)
6031.07	A	40	2.51	4.56	2-3	$c^3P-z^5F^o$
6028.26	A	40	2.48	4.53	1-2	(97)
6120.98	A	5	2.49	4.50	0-1	
6095.93	A	3	2.48	4.50	1-1	
V II continued						
5928.86	A	100	2.51	4.59	2-3	$c^3P-z^3D^o$
5897.54	A	50	2.48	4.57	1-2	(98)
5951.45	A	4	2.49	4.56	0-1	
5819.93	A	80	2.51	4.63	2-3	$c^3P-z^5D^o$ (99)
3787.235	A	150	2.51	5.77	2-2	$c^3P-z^3P^o$
*3758.22§	A	40	2.48	5.76	1-1	(100)
3794.366	A	50	2.51	5.76	2-1	
3772.962	A	80	2.48	5.75	1-0	
3751.222	A	150	2.48	5.77	1-2	
3767.720	A	40	2.49	5.76	0-1	
3731.64	A	1	2.48	5.79	1-2	$c^3P-z^5P^o$ (101)
3724.984	A	2	2.51	5.82	2-3	$c^3P-y^5D^o$
3700.96	A	30	2.48	5.81	1-2	(102)
3709.335	A	40	2.49	5.82	0-1	
3736.017	A	70	2.51	5.81	2-2	
3700.126	A	40	2.48	5.82	1-1	
3735.158	A	30	2.51	5.82	2-1	
3711.118	A	50	2.48	5.81	1-0	
3549.030	A	3	2.48	5.96	1-0	$c^3P-z^1S^o$ (103)
3463.079	A	4	2.51	6.08	2-3	$c^3P-y^3F^o$
3434.024	A	4	2.48	6.07	1-2	(104)
3464.17	A	6	2.51	6.07	2-2	
3430.709	A	5	2.51	6.12	2-3	$c^3P-z^1F^o$ (105)
3401.740	A	1	2.51	6.14	2-2	$c^3P-z^5S^o$
3372.666	A	3	2.48	6.14	1-2	(106)
3382.529	A	30	2.51	6.16	2-2	$c^3P-z^1D^o$
3353.776	A	30	2.48	6.16	1-2	(107)
3251.869	A	200	2.51	6.31	2-3	$c^3P-y^3D^o$
3257.893	A	100	2.48	6.27	1-2	(108)
3297.528	A	20	2.49	6.23	0-1	
3285.022	A	50	2.51	6.27	2-2	
3290.340	A	50	2.48	6.23	1-1	
3317.912	A	20	2.51	6.23	2-1	
3247.908	A	4	2.51	6.31	2-2	$c^3P-y^3P^o$
3261.80	A	5	2.48	6.26	1-1	(109)
3288.985	A	7	2.51	6.26	2-1	
3231.380	A	3	2.48	6.31	1-2	
3119.32	A	4	2.51	6.47	2-3	$c^3P-x^3F^o$ (110)
3115.16	A	2	2.48	6.44	1-1	$c^3P-z^3S^o$ (111)
3083.208	A	40	2.51	6.51	2-3	$c^3P-x^3D^o$
3065.61	A	50	2.48	6.51	1-2	(112)
3081.01	A	20	2.49	6.49	0-1	
3089.633	A	4	2.51	6.51	2-2	
3074.66	A	12	2.48	6.49	1-1	
3079.75	A	1	2.51	6.52	2-1	$c^3P-z^1P^o$
3062.178	A	3	2.49	6.52	0-1	(113)
2981.924	A	15	2.51	6.65	2-2	$c^3P-w^3D^o$ †
2992.378	A	2	2.51	6.64	2-1	(114)
5193.43	P		2.51	4.89	6-5	$b^3H-z^3G^o$
5237.70	A	20	2.50	4.86	5-4	(115)
5263.99	A	15	2.50	4.84	4-3	
5171.13	P		2.50	4.89	5-5	
5217.36	P		2.50	4.86	4-4	
3669.410	A	300	2.51	5.88	6-6	$b^3H-z^3H^o$
3700.337	A	200	2.50	5.84	5-5	(116)
3738.335	A	200	2.50	5.81	4-4	
3711.751	A	10	2.51	5.84	6-5	
3733.607	A	4	2.50	5.81	5-4	
3658.266	A	10	2.50	5.88	5-6	
*3695.158	A	8	2.50	5.84	4-5	
3509.024	A	40	2.51	6.03	6-5	$b^3H-y^3G^o$
3513.877	A	15	2.50	6.02	5-4	(117)
3527.867	A	10	2.50	6.00	4-3	
3498.83	P		2.50	6.03	5-5	
3509.20	P		2.50	6.02	4-4	
3448.89	A	1	2.50	6.08	5-4	$b^3H-y^3F^o$
3451.048	A	12	2.50	6.08	4-3	(118)
3420.15	A	2	2.51	6.12	6-5	$b^3H-z^1H^o$
3410.46	A	1	2.50	6.12	5-5	(119)
3406.06	A	7	2.50	6.12	4-5	
3408.955	A	15	2.50	6.12	4-3	$b^3H-z^1F^o$ (120)
3391.01	A	1	2.50	6.14	4-4	$b^3H-z^1G^o$ (121)
3134.928	A	200	2.51	6.45	6-6	$b^3H-y^3H^o$
3136.503	A	160	2.50	6.44	5-5	(122)
3139.733	A	160	2.50	6.43	4-4	
3144.700	A	20	2.51	6.44	6-5	
3143.477	A	15	2.50	6.43	5-4	
3126.79	A	2	2.50	6.45	5-6	
3132.793	A	3	2.50	6.44	4-5	
3033.445	A	200	2.51	6.58	6-7	$b^3H-z^3I^o$
3048.214	A	200	2.50	6.55	5-6	(123)
3063.247	A	200	2.50	6.53	4-5	
3055.942	A	7	2.51	6.55	6-6	
3066.80	A	4	2.50	6.53	5-5	
6226.29	A	10n	2.55	4.53	2-2	$b^3D-z^5F^o$ (124)
6028.98	A	20	2.55	4.59	3-3	$b^3D-z^3D^o$
6086.93	A	15n	2.55	4.57	2-2	(125)
6083.82	A	10n	2.53	4.56	1-1	
6026.81	A	6	2.55	4.59	2-3	
V II continued						
5916.364	A	15	2.55	4.63	3-3	$b^3D-z^5D^o$
5967.77	A	6	2.55	4.61	2-2	(126)
5914.28	A	5	2.55	4.63	2-3	
*5047.308§	A	10	2.55	4.99	3-4	$b^3D-z^3F^o$
5106.233	A	5	2.55	4.96	2-3	(127)
5132.19	A	2	2.53	4.94	1-2	
5157.28	A	2?	2.55	4.94	2-2	
3828.968	A	30	2.55	5.77	2-2	$b^3D-z^3P^o$
3813.12	A	3	2.53	5.77	1-2	(128)
3774.678	A	15	2.55	5.81	2-2	$b^3D-y^5D^o$
3773.80	A	5	2.55	5.82	2-1	(129)
3761.20	A	1	2.53	5.81	1-2	
3604.375	A	4	2.53	5.96	1-0	$b^3D-z^1S^o$ (130)
3489.947	A	20	2.55	6.08	3-4	$b^3D-y^3F^o$
3496.27	P		2.55	6.08	2-3	(131)
m3485.82	P	V+	2.53	6.07	1-2	
m3497.00	P	V+	2.55	6.08	3-3	
3497.39	A	4	2.55	6.07	2-2	
3498.12	P		2.55	6.07	3-2	
3453.78	A	1	2.55	6.12	3-3	$b^3D-z^1F^o$
3453.087	A	90	2.55	6.12	2-3	(132)
3435.38	A	7	2.55	6.14	3-4	$b^3D-z^1G^o$ (133)
3434.46	A	1	2.55	6.14	3-2	$b^3D-z^5S^o$
3433.767	A	3	2.55	6.14	2-2	(134)
3414.879	A	3	2.55	6.16	3-2	$b^3D-z^1D^o$
*3414.192§	A	10	2.55	6.16	2-2	(135)
3403.159	A	3	2.53	6.16	1-2	
3281.755	A	10	2.55	6.31	3-3	$b^3D-y^3D^o$
3314.862	A	50	2.55	6.27	2-2	(136)
m3337.76	P	V+	2.53	6.23	1-1	
3315.53	A	5	2.55	6.27	3-2	
3348.372	A	4	2.55	6.23	2-1	
3281.120	A	40	2.55	6.31	2-3	
3304.474	A	40	2.53	6.27	1-2	
3277.71	A	30	2.55	6.31	3-2	$b^3D-y^3P^o$
3318.907	A	20	2.55	6.26	2-1	(137)
3316.873	A	20	2.53	6.25	1-0	
3277.082	A	10	2.55	6.31	2-2	
3308.480	A	20	2.53	6.26	1-1	
3266.91	A	1?	2.53	6.31	1-2	
3130.736	A	50	2.55	6.50	3-4	$b^3D-x^3F^o$
3146.226	A	40 l	2.55	6.47	2-3	(138)
3151.319	A	100	2.53	6.45	1-2	
3146.818	A	10	2.55	6.47	3-3	
*3160.781	A	15	2.55	6.45	2-2	
3110.07	A	3?	2.55	6.51	3-3	$b^3D-x^3D^o$
3116.02	A	3	2.55	6.51	2-2	(139)
3116.11	A	2	2.53	6.49	1-1	
3106.829	A	3	2.53	6.51	1-2	
3105.973	A	5	2.55	6.52	2-1	$b^3D-z^1P^o$ (140)
3001.754	A	30	2.55	6.66	3-3	$b^3D-w^3D^o$
3006.503	A	20	2.55	6.65	2-2	(141)
3008.508	A	15	2.53	6.64	1-1	
3007.035	A	1	2.55	6.65	3-2	
2997.945	A	6	2.53	6.65	1-2	
5203.94	A	2	2.59	4.96	2-3	$a^1D-z^3F^o$ (142)
3881.04	A	2	2.59	5.77	2-2	$a^1D-z^3P^o$ (143)
3623.289	A	10	2.59	6.00	2-3	$a^1D-y^3G^o$ (144)
3541.341	A	50	2.59	6.08	2-3	$a^1D-y^3F^o$
3543.480	A	4	2.59	6.07	2-2	(145)
3497.031	A	200	2.59	6.12	2-3	$a^1D-z^1F^o$ (146)
3457.153	A	300	2.59	6.16	2-2	$a^1D-z^1D^o$ (147)
3359.50	A	2	2.59	6.26	2-1	$a^1D-y^3P^o$ (148)
3330.780	A	4	2.59	6.31	2-3	$a^1D-y^3D^o$
3355.366	A	20	2.59	6.27	2-2	(149)
3183.674	A	20	2.59	6.47	2-3	$a^1D-x^3F^o$
3197.574	A	7	2.59	6.45	2-2	(150)
3161.313	A	30	2.59	6.49	2-1	$a^1D-x^3P^o$ (151)
3141.486	A	40	2.59	6.52	2-1	$a^1D-z^1P^o$ (152)
3039.767	A	2	2.59	6.65	2-2	$a^1D-w^3D^o$ (153)
2963.249	A	9	2.59	6.75	2-1	$a^1D-x^3P^o$ (154)
4038.545	A	2	2.75	5.81	1-0	$a^1P-y^5D^o$ (155)
*3847.323§	A	100	2.75	5.96	1-0	$a^1P-z^1S^o$ (156)
3712.533	A	8	2.75	6.07	1-2	$a^1P-y^3F^o$ (157)
3618.924	A	200	2.75	6.16	1-2	$a^1P-z^1D^o$ (158)
3507.534	A	20	2.75	6.27	1-2	$a^1P-y^3D^o$ (159)
3465.35	A	4	2.75	6.31	1-2	$a^1P-y^3P^o$ (160)
3335.482	A	10	2.75	6.45	1-2	$a^1P-x^3F^o$ (161)
3285.672	A	3	2.75	6.51	1-2	$a^1P-x^3D^o$
3296.053	A	8	2.75	6.49	1-1	(162)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V II continued						
3274.50	A	10	2.75	6.52	1-1	a^1P-z^1P^o (163)
3081.30	A	10	2.75	6.75	1-1	a^1P-x^3P^o (164)
3928.32	A	5	2.89	6.03	5-5	a^1H-y^3G^o
3945.27	P		2.89	6.02	5-4	(165)
3815.38	A	200	2.89	6.12	5-5	a^1H-z^1H^o (168)
•3798.48 §	A	10	2.89	6.14	5-4	a^1H-z^1G^o (167)
3463.831	A	4	2.89	6.45	5-6	a^1H-y^3H^o
3484.32	A	2	2.89	6.43	5-4	(168)
3415.91	A	2	2.89	6.50	5-4	a^1H-x^3F^o (169)
3367.666	A	3	2.89	6.55	5-6	a^1H-z^3I^o (170)
3250.775	A	200	2.89	6.68	5-4	a^1H-y^1G^o (171)
3142.183	A	20	2.89	6.82	5-5	a^1H-x^3G^o (172)
3122.887	A	100	2.89	6.84	5-6	a^1H-z^1I^o (173)
3113.560	A	100	2.89	6.85	5-5	a^1H-y^1H^o (174)
4162.072	A	2	3.11	6.08	2-3	b^1D-y^3F^o
4163.855	A	2	3.11	6.07	2-2	(175)
•4101.00 §	A	8	3.11	8.12	2-3	b^1D-z^1F^o (176)
4046.269	A	50	3.11	6.18	2-2	b^1D-z^1D^o (177)
3907.52	A	3	3.11	6.27	2-2	b^1D-y^3D^o (178)
•3695.158	A	8	3.11	6.45	2-2	b^1D-x^3F^o (179)
3834.13	A	1	3.11	6.51	2-2	b^1D-x^3D^o
3648.848	A	7	3.11	6.49	2-1	(180)
3630.496	A	20	3.11	6.52	2-1	b^1D-z^1P^o (181)
3478.961	A	6	3.11	6.66	2-3	b^1D-w^3D^o (182)
3385.790	A	3	3.11	8.75	2-1	b^1D-x^3P^o (183)
3337.845	A	200	3.11	6.81	2-3	b^1D-y^1F^o (184)
3226.934	A	40	3.11	8.93	2-1	b^1D-y^1P^o (185)
3109.375	A	20	3.11	7.08	2-2	b^1D-y^1D^o (186)
4398.52	A	4n	3.31	6.12	3-3	a^1F-z^1F^o (187)
4368.67	P		3.31	6.14	3-4	a^1F-z^1G^o (188)
3960.37	A	1	3.31	6.43	3-4	a^1F-y^3H^o (189)
3690.70	A	1	3.31	6.66	3-3	a^1F-w^3D^o (190)
3661.383	A	200	3.31	6.68	3-4	a^1F-y^1G^o (191)
3532.285	A	20	3.31	6.81	3-3	a^1F-y^1F^o (192)
3512.13	A	3	3.31	6.83	3-4	a^1F-x^3G^o
3506.57	A	7	3.31	8.83	3-3	(193)
3277.448	A	15	3.31	7.08	3-2	a^1F-y^1D^o (194)
•5375.65 §	A	10	3.74	6.08	4-4	a^3F-y^3F^o
5288.31	A	5	3.74	6.08	3-3	(195)
5280.00	A	3?	3.74	6.07	2-2	
5151.87	A	2	3.74	8.14	4-4	a^3F-z^1G^o (196)
4813.952	A	50	3.74	8.31	4-3	a^3F-y^3D^o
4884.08	A	50	3.74	6.27	3-2	(197)
4947.58	A	40	3.74	6.23	2-1	
4811.14	A	6	3.74	6.31	3-3	
4874.805	A	4	3.74	6.27	2-2	
4475.24	A	1	3.74	8.50	4-4	a^3F-x^3F^o
4529.08	A	5?	3.74	8.47	4-3	(198)
4556.785	A	4	3.74	8.45	3-2	
4453.35	A	30n	3.74	6.51	4-3	a^3F-x^3D^o
4484.32	A	40n	3.74	6.51	3-2	(199)
4475.70	A	20n	3.74	6.49	2-1	
4458.53	A	3n	3.74	8.51	2-2	
•4234.55 §	A	40n	3.74	8.66	4-3	a^3F-w^3D^o
4242.894	A	30n	3.74	8.65	3-2	(200)
4257.02	A	15n	3.74	8.84	2-1	
4027.30	A	1	3.74	6.81	4-3	a^3F-y^1F^o
4019.05	A	7n	3.74	6.81	2-3	(201)
4018.82	A	20n	3.74	8.82	4-5	a^3F-x^3G^o
3999.195	A	30n	3.74	8.83	3-4	(202)
3985.783	A	30	3.74	8.83	2-3	
4001.17	A	2	3.74	8.83	4-4	
•3991.965	A	2	3.74	8.83	3-3	
3970.15	A	5	3.74	6.85	4-5	a^3F-y^1H^o (203)
3697.72	A	1	3.74	7.08	3-2	a^3F-y^1D^o (204)
3138.05	A	20	3.74	7.88	4-4	a^3F-w^3F^o
3141.07	A	2	3.74	7.87	3-3	(205)
6080.11	A	6	3.78	5.81	4-4	d^3F-z^3H^o (206)
•5290.74 §	A	6	3.79	6.12	2-3	d^3F-z^1F^o (207)
5191.59	A	2	3.78	6.16	3-2	d^3F-z^1D^o (208)
4883.415	A	100	3.78	6.31	4-3	d^3F-y^3D^o
4965.40	A	40	3.78	6.27	3-2	(209)
5048.91	A	15	3.79	6.33	2-1	
4973.18	A	2	3.79	6.27	2-2	
4535.215	A	3n	3.78	6.50	4-4	d^3F-x^3F^o
4596.37	A	5n	3.78	6.47	3-3	(210)
4634.21	A	3n	3.79	6.45	2-2	
4590.505	A	7n	3.78	8.47	4-3	
4627.48	A	1	3.78	6.45	3-2	
4517.35	A	3n	3.79	6.52	2-1	d^3F-z^1P^o (211)
4512.72	A	60n	3.78	6.51	4-3	d^3F-x^3D^o
4532.188	A	40n	3.78	8.51	3-2	(212)
4558.46	A	20	3.79	6.49	2-1	
4518.38	A	2n	3.78	6.51	3-3	
4538.64	A	2	3.79	6.51	2-2	
4524.81	P		3.79	6.51	2-3	
4304.15	A	2	3.78	6.65	3-2	d^3F-w^3D^o (213)
4080.44	A	2	3.78	6.81	3-3	d^3F-y^1F^o
4085.67	A	10n	3.79	6.81	2-3	(214)
4065.070	A	100	3.78	6.82	4-5	d^3F-x^3G^o
4053.59	A	60 l	3.78	6.83	3-4	(215)
•4051.34 §	A	100	3.79	6.83	2-3	
4049.03	A	3	3.78	6.83	4-4	
4017.29	A	15n	3.78	6.85	4-5	d^3F-y^1H^o (216)
3167.420	A	40	3.78	7.68	4-4	d^3F-w^1F^o
3174.531	A	60	3.78	7.67	3-3	(217)
3182.59	A	20	3.79	7.66	2-2	
3171.739	A	9	3.78	7.67	4-3	
3179.416	A	8	3.78	7.66	3-2	
3170.308	A	8	3.78	7.68	3-4	
3177.696	A	6	3.79	7.67	2-3	
2973.975	A	40	3.78	7.93	4-5	d^3F-w^3G^o †
2985.184	A	60n	3.78	7.93	3-4	(218)
2994.540	A	60	3.79	7.91	2-3	
6801.16	A	5	3.96	5.77	2-2	d^3P-z^3P^o (219)
5249.22	A	1?	3.96	6.31	2-3	d^3P-y^3D^o (220)
4963.75	A	2	3.96	6.44	2-1	d^3P-z^3S^o (221)
4912.38	A	2	3.96	6.47	2-3	d^3P-x^3F^o (222)
4833.396	A	6	3.98	8.51	2-3	d^3P-x^3D^o
4839.08	A	3	3.96	6.51	2-2	(223)
4408.92	A	40N?	3.96	6.75	2-2	d^3P-x^3P^o
4440.41	A	5n	3.99	6.77	1-0	(224)
4483.50	A	2n	4.00	6.75	0-1	
4232.065	A	80n	3.96	6.87	2-1	d^3P-y^3S^o
4278.893	A	60n	3.99	6.87	1-1	(225)
4301.130	A	40n	4.00	6.87	0-1	
•4142.90 §	A	6	3.96	6.93	2-1	d^3P-y^1P^o (226)
•3991.965	A	2	3.99	7.08	1-2	d^3P-y^1D^o (227)
3070.12	A	25 l	3.98	7.98	2-3	d^3P-w^3D^o
3075.58	A	5	3.99	8.00	1-2	(228)
3075.043	A	3	4.00	8.02	0-1	
3051.308	A	3	3.96	8.00	2-2	
6672.84	A	3n	4.23	6.08	3-3	b^1F-y^3F^o (229)
6517.27	A	15n	4.23	6.12	3-3	b^1F-z^1F^o (230)
8380.11	A	40n	4.23	6.18	3-2	b^1F-z^1D^o (231)
5019.855	A	100n	4.23	6.68	3-4	b^1F-y^1G^o (232)
4325.22	A	9n	4.23	7.08	3-2	b^1F-y^1D^o (233)
3343.312	A	2	4.23	7.92	3-4	b^1F-w^3G^o
3351.53	A	1	4.23	7.91	3-3	(234)
3293.146	A	50	4.23	7.97	3-2	b^1F-x^1D^o (235)
3167.49	A	30	4.23	8.12	3-4	b^1F-x^1G^o (236)
3118.78	A	40	4.23	8.19	3-3	b^1F-x^1F^o (237)
5842.01	A	60n	4.50	6.68	4-4	c^1G-y^1G^o (238)
5341.22	A	2	4.50	8.81	4-3	c^1G-y^1F^o (239)
5322.61	A	5	4.50	8.82	4-5	c^1G-x^3G^o (240)
5241.19	A	100n	4.50	6.85	4-5	c^1G-y^1H^o (241)
3608.32	A	1	4.50	7.92	4-4	c^1G-w^3G^o (242)
3404.43	A	80 l	4.50	8.12	4-4	c^1G-x^1G^o (243)
3345.899	A	70	4.50	8.19	4-3	c^1G-x^1F^o (244)
V II continued						
3035.14	A	3N	4.89	8.96	5-4	z^3G^o-e^5H (245)
3038.00	A	2N?	4.94	9.00	2-3	z^3F^o-e^5P (246)
5530.10	A	4	5.44	7.68	3-4	c^3D-w^3F^o
5562.02	A	4np?	5.45	7.67	2-3	(247)
m4875.49	P	V	5.44	7.98	3-3	c^3D-v^3D^o
4842.50	A	2n	5.45	8.00	2-2	(248)
4813.00	A	1?	5.45	8.02	2-1	
3148.738	A	15	5.44	9.36	3-3	c^3D-t^3D^o
3163.76	A	10	5.45	9.35	2-2	(249)
3172.330	A	7	5.46	9.35	1-1	
3154.80	A	1	5.45	9.36	2-3	
3071.77	A	2n	5.44	9.46	3-4	c^3D-u^3F^o (250)
5016.60	A	4	5.51	7.97	2-2	c^1D-x^1D^o (251)
4618.52	A	3	5.51	8.19	2-3	c^1D-x^1F^o (252)

Strongest Unclassified Lines of V II

5791.47	A	15
3611.58	A	10n
3301.66	A	10
3206.16	A	15N1
3201.58	A	15N1
3195.50	A	15N1

Cr I I P 6.74 Anal A List B March 1941

4254.346//	C	1000R	0.00	2.90	3-4	a^7S-z^7P^o
4274.803	C	800R	0.00	2.89	3-3	(1)
4289.721	C	700R	0.00	2.88	3-2	
3732.032	C	50	0.00	3.31	3-3	a^7S-z^5P^o
3730.807	C	40	0.00	3.31	3-2	(2)
3615.645	C	30	0.00	3.41	3-4	a^7S-z^7D^o
3635.281	C	10	0.00	3.39	3-3	(3)
3578.687	C	1000R	0.00	3.45	3-4	a^7S-y^7P^o
3593.488	C	900R	0.00	3.43	3-3	(4)
3605.333	C	750R	0.00	3.42	3-2	
3351.966	C	12	0.00	3.68	3-3	a^7S-y^5P^o
3379.171	C	15	0.00	3.65	3-2	(5)
6330.101	C	40	0.94	2.89	2-3	a^5S-z^7P^o
6362.874	C	30	0.94	2.88	2-2	(6)
5208.438	C	500R	0.94	3.31	2-3	a^5S-z^5P^o
5208.039	C	300R	0.94	3.31	2-2	(7)
5204.518	C	200R	0.94	3.31	2-1	
5081.903	C	25	0.94	3.39	2-3	a^5S-z^7D^o
5051.900	C	40	0.94	3.38	2-2	(8)
5072.920	C	60	0.94	3.37	2-1	
4942.495	C	200	0.94	3.43	2-3	a^5S-y^7P^o
4964.928	C	100	0.94	3.42	2-2	(9)
4496.862	C	100	0.94	3.68	2-3	a^5S-y^5P^o
4545.956	C	50	0.94	3.65	2-2	(10)
4580.056	C	40	0.94	3.63	2-1	
3833.49	B	4	0.94	4.16	2-3	a^5S-z^5D^o
3852.58	B	15	0.94	4.14	2-2?	(11)
3870.367	C	25n	0.94	4.13	2-1	
3758.72	B	4	0.94	4.22	2-2	a^5S-z^3P^o (12)
3192.12	B	5	0.94	4.80	2-3	a^5S-z^3D^o
3210.62	B	2	0.94	4.78	2-2	(13)
2988.649	C	25r	0.94	5.07	2-3	a^5S-x^5P^o
2994.069	C	18	0.94	5.06	2-2	(14)
2998.787	C	20	0.94	5.05	2-1	
2984.82	B	8	0.94	5.07	2-3	a^5S-y^5F^o
2995.10	B	25	0.94	5.06	2-2	(15)
8580.96	B	8	1.03	2.90	4-4	a^5D-z^7P^o
6537.931	D	20	1.00	2.89	3-3	(16)
6501.212	D	15	0.98	2.88	2-2	
6830.015	C	25	1.03	2.89	4-3	
6572.900	C	15	1.00	2.88	3-2	
5798.46	B	25	1.03	3.15	4-5	a^5D-z^7F^o
5790.59	P		1.00	3.13	3-4	(17)
			0.98	3.11	2-3	
•5785.88	F	(5d?)	0.96	3.10	1-2	
5409.791	C	500	1.03	3.31	4-3	a^5D-z^5P^o
5345.807	C	500	1.00	3.31	3-2	(18)
5298.688	C	100	0.98	3.31	2-1	
5348.319	C	350	1.00	3.31	3-3	
5298.389	C	100	0.98	3.31	2-2	
5264.152	C	200	0.96	3.31	1-1	
5300.749	C	75	0.98	3.31	2-3	
5285.732	C	100	0.98	3.31	1-2	
5247.564	C	150	0.98	3.31	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
5122.131	C	30	1.03	3.44	4-5	a^5D-z^7P^o †
5112.490	C	25	1.00	3.41	3-4	(19)
5107.70	B	7	0.98	3.39	2-3	
5168.63	B	8	1.03	3.41	4-4	
5151.83	B	12	1.00	3.39	3-3	
5138.71	B	10	0.98	3.38	2-2	
5183.41	B	10	1.00	3.38	3-2	
5093.41	B	7	1.03	3.45	4-4	a^5D-y^7P^o
5068.290	C	35	1.00	3.43	3-3	(20)
5048.752	C	25	0.98	3.43	2-2	
5123.465	C	35	1.03	3.43	4-3	
5091.890	C	30	1.00	3.43	3-2	
5038.87	P		1.00	3.45	3-4	
5025.54	B	10	0.98	3.43	2-3	
5019.20	B	20	0.96	3.43	1-2	
4646.174	C	100	1.03	3.68	4-3	a^5D-y^5P^o
4652.158	C	100	1.00	3.65	3-2	(21)
4651.285	C	75	0.98	3.63	2-1	
4600.752	C	75	1.00	3.68	3-3	
4616.137	C	75	0.98	3.65	2-2	
4626.188	C	65	0.96	3.63	1-1	
4565.512	C	50	0.98	3.68	2-3	
4591.394	C	60	0.96	3.65	1-2	
4613.373	C	60	0.96	3.63	0-1	
4351.770	C	100	1.03	3.86	4-5	a^5D-z^5F^o
4344.507	C	100	1.00	3.84	3-4	(22)
4339.450	C	75	0.98	3.82	2-3	
4337.566	C	75	0.96	3.81	1-2	
4339.718	C	60	0.96	3.80	0-1	
4384.977	C	75	1.03	3.84	4-4	
4371.379	C	75	1.00	3.82	3-3	
4359.631	C	75	0.98	3.81	2-2	
4351.051	C	75	0.96	3.80	1-1	
4412.350	C	40	1.03	3.82	4-3	
4391.753	C	40	1.00	3.81	3-2	
4373.254	C	35	0.98	3.80	2-1	
3919.159	C	100	1.03	4.17	4-4	a^5D-z^5D^o
3908.755	C	100	1.00	4.16	3-3	(23)
3902.915	C	50	0.98	4.14	2-2	
3903.164	C	25	0.96	4.13	1-1	
3941.490	C	60	1.03	4.16	4-3	
3928.636	C	60	1.00	4.14	3-2	
3921.022	C	50	0.98	4.13	2-1	
3916.243	C	25	0.96	4.12	1-0	
3886.789	C	50	1.00	4.17	3-4	
3883.292	C	60	0.98	4.16	2-3	
3885.218	C	40	0.96	4.14	1-2	
3894.035	C	40	0.96	4.13	0-1	
3831.032	C	12	1.00	4.22	3-2	a^5D-z^3P^o
3849.534	C	40	0.98	4.18	2-1	(24)
3852.218	C	30	0.96	4.17	1-0	
3806.55	B	5	0.98	4.22	2-2	
3832.32	B	5	0.96	4.18	1-1	
3789.723	C	15	0.96	4.22	1-2	
3823.522	C	12	0.96	4.18	0-1	
3266.634	C	7	1.03	4.80	4-3	a^5D-z^3D^o
3263.25	P		1.00	4.78	3-2	(25)
3259.60	B	1	0.98	4.76	2-1	
3244.115	C	7	1.00	4.80	3-3	
3245.485	C	10	0.98	4.78	2-2	
3247.274	C	4	0.96	4.76	1-1	
3226.55	B	4	0.98	4.80	2-3	
3233.234	C	7	0.96	4.78	1-2	
3240.951	C	6	0.96	4.76	0-1	
3053.880	C	50r	1.03	5.07	4-3	a^5D-x^5P^o
3039.780	C	7	1.00	5.06	3-2	(26)
3029.164	C	18	0.98	5.05	2-1	
3034.190	C	25	1.00	5.07	3-3	
3024.350	C	40r	0.98	5.06	2-2	
3018.496	C	10r	0.96	5.05	1-1	
3018.821	C	10r	0.98	5.07	2-3	
3013.713	C	20r	0.96	5.06	1-2	
3013.030	C	15	0.96	5.05	0-1	
3081.558	C	50r	1.03	5.11	4-5	a^5D-y^5F^o
3017.569	C	35r	1.00	5.09	3-4	(27)
3014.915	C	20r	0.98	5.07	2-3	
3014.760	C	18r	0.96	5.06	1-2	
3015.194	C	18r	0.96	5.05	0-1	
3037.044	C	15	1.03	5.09	4-4	
3030.245	C	25r	1.00	5.07	3-3	
3025.40	P		0.98	5.06	2-2	
3020.673	C	8	0.96	5.05	1-1	
3049.883	C	3	1.03	5.07	4-3	
3040.846	C	10r	1.00	5.06	3-2	
3031.353	C	7	0.98	5.05	2-1	
2986.473	C	30r	1.03	5.16	4-4	a^5D-y^5D^o
2985.995	C	35r	1.00	5.13	3-3	(28)
2985.849	C	8r	0.98	5.11	2-2	
2986.137	C	3	0.96	5.10	1-1	
3005.057	C	25r	1.03	5.13	4-3	
3000.890	C	25r	1.00	5.11	3-2	
2996.580	C	15r	0.98	5.10	2-1	
2991.886	C	15	0.96	5.09	1-0	
2967.642	C	15	1.00	5.16	3-4	
2971.112	C	20	0.98	5.13	2-3	
2975.483	C	20	0.96	5.11	1-2	
2980.791	C	25	0.96	5.10	0-1	
9290.44	A	50	2.53	3.86	6-5	a^5G-z^5F^o
*9447.00	A	50	2.53	3.84	5-4	(29)
9574.25	A	50	2.53	3.82	4-3	
9670.48	A	50	2.53	3.81	3-2	
9734.52	A	50	2.53	3.80	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
*9394.17	A	20	2.53	3.86	5-5	a^5G-z^5F^o
*9447.00	A	50	2.53	3.84	4-4	cont
9571.76	A	25	2.53	3.82	3-3	
9667.20	A	25	2.53	3.81	2-2	
*9294.17	A	20	2.53	3.86	4-5	
9444.36	A	5	2.53	3.84	3-4	
9568.58	A	4	2.53	3.82	2-3	
4872.02	B	18	2.53	5.07	4-3	a^5G-x^5P^o †
4885.776	C	75	2.53	5.06	3-2	(30)
4789.354	D	75	2.53	5.11	6-5	a^5G-y^5F^o
*4829.376	C	100d?	2.53	5.09	5-4	(31)
4861.842	C	75	2.53	5.07	4-3	
4888.530	C	40	2.53	5.06	3-2	
4903.239	C	70	2.53	5.05	2-1	
*4790.337	C	20	2.53	5.11	5-5	
*4829.376	C	100d?	2.53	5.09	4-4	
4861.205	C	35	2.53	5.07	3-3	
4887.73	B	25	2.53	5.06	2-2	
*4790.337	C	20	2.53	5.11	4-5	
4828.66	B	8	2.53	5.09	3-4	
4860.37	B	7	2.53	5.07	2-3	
4571.676	C	40	2.53	5.23	6-7	a^5G-z^5H^o
4601.021	C	30	2.53	5.23	5-6	(32)
4631.893	C	45*	2.53	5.20	4-5	
4637.182	C	40	2.53	5.19	3-4	
4648.136	C	25	2.53	5.19	2-3	
4600.104	C	40	2.53	5.23	6-6	
*4631.963	C	45*	2.53	5.20	5-5	
*4637.772	C	40	2.53	5.19	4-4	
4648.868	C	35	2.53	5.19	3-3	
4631.00	B	4	2.53	5.20	6-5	
*4637.772	C	40	2.53	5.19	5-4	
4649.461	C	45	2.53	5.19	4-3	
4526.466	C	75	2.53	5.26	6-6	a^5G-z^5G^o
4530.755	D	100*	2.53	5.26	5-5	(33)
*4535.731	C	60	2.53	5.25	4-4	
4540.508	C	50	2.53	5.25	3-3	
4544.619	C	50	2.53	5.25	2-2	
4529.851	C	25	2.53	5.26	6-5	
*4535.731	C	60	2.53	5.25	5-4	
4541.071	C	30	2.53	5.25	4-3	
4545.335	C	25	2.53	5.25	3-2	
*4527.339	C	40	2.53	5.26	5-6	
4530.688	D	100*	2.53	5.26	4-5	
4535.146	C	35	2.53	5.25	3-4	
4539.788	C	30	2.53	5.25	2-3	
m4466.13	P	Cr	2.53	5.30	5-4	a^5G-x^5D^o †
*4518.63	B	6	2.53	5.26	4-3	(34)
4561.20	B	2	2.53	5.24	3-2	
4126.531	C	20	2.53	5.52	6-6	a^5G-y^5G^o
*4153.816	C	25	2.53	5.50	5-5	(35)
*4163.625	D	20	2.53	5.50	4-4	
4191.271	C	25	2.53	5.48	3-3	
4203.590	C	18	2.53	5.47	2-2	
4153.067	C	9	2.53	5.50	6-5	
*4163.625	D	20	2.53	5.50	5-4	
4191.750	C	10	2.53	5.48	4-3	
4204.19	B	8	2.53	5.47	3-2	
4127.302	C	7	2.53	5.52	5-6	
*4153.816	C	25	2.53	5.50	4-5	
4163.16	P		2.53	5.50	3-4	
4190.66	B	4	2.53	5.48	2-3	
4033.263	C	6	2.53	5.59	6-5	a^5G-x^5F^o
*4037.294	C	10	2.53	5.59	5-4	(36)
4043.246	C	8	2.53	5.59	4-3	
4046.760	C	6	2.53	5.58	3-2	
4050.03	B	4	2.53	5.58	2-1	
*4033.95	B	3	2.53	5.59	5-5	
*4037.294	C	10	2.53	5.59	4-4	
4041.79	B	6	2.53	5.59	3-3	
4046.19	B	3	2.53	5.58	2-2	
*4033.95	B	3	2.53	5.59	4-5	
4036.80	B	1	2.53	5.59	3-4	
4037.103	C	20	2.53	5.60	5-6	a^5G-z^3H^o
*4026.166	C	18	2.53	5.60	4-5	(37)
4025.012	C	15	2.53	5.60	3-4	
*4026.166	C	18	2.53	5.60	5-5	
*4025.44	B	5	2.53	5.60	4-4	
			2.53	5.60	5-4	
3963.690	C	100	2.53	5.65	6-7	a^5G-y^5H^o
3969.748	C	70	2.53	5.64	5-6	(38)
*3976.665	C	100	2.53	5.64	4-5	
3983.907	C	100	2.53	5.63	3-4	
3991.133	C	80	2.53	5.63	2-3	
*3969.061	C	18	2.53	5.64	6-6	
*3976.665	C	100	2.53	5.64	5-5	
*3984.338	C	25	2.53	5.63	4-4	
3991.673	C	25	2.53	5.63	3-3	
3976.01	B	5	2.53	5.64	6-5	
*3984.338	C	25	2.53	5.63	5-4	
3992.11	B	4	2.53	5.63	4-3	
*3860.13	B	5	2.53	5.73	5-4	a^5G-w^5D^o
			2.53	5.73	4-4	(39)
3817.844	C	10	2.53	5.77	6-5	a^5G-w^5F^o
*3816.173	C	20	2.53	5.77	5-4	(40)
3820.874	C	7	2.53	5.76	4-3	
3822.10	B	5	2.53	5.76	3-2	
*3818.481	C	25	2.53	5.77	5-5	
*3816.173	C	20	2.53	5.77	4-4	
3821.582	C	8	2.53	5.76	2-2	
*3818.481	C	25	2.53	5.77	4-5	
3819.97	B	5	2.53	5.76	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
3777.32	B	5	2.53	5.80	6-5	a^5G-z^3G^o
3789.49	B	2	2.53	5.79	5-4	(41)
*3777.93	B	3	2.53	5.80	5-5	
			2.53	5.80	4-5	
3796.99	B	5	2.53	5.78	2-3	
*3767.431	C	12	2.53	5.81	6-5	a^5G-y^3G^o
*3768.08	B	18	2.53	5.81	5-4	(42)
3769.00	B	7	2.53	5.81	4-3	
*3768.08	B	18	2.53	5.81	5-5	
			2.53	5.81	4-4	
3768.62	B	7	2.53	5.81	3-3	
*3768.08	B	18	2.53	5.81	4-5	
3743.884	C	50	2.53	5.83	6-6	a^5G-x^5G^o
*3743.578	C	45	2.53	5.83	5-5	(43)
*3748.998	C	50	2.53	5.83	4-4	
3757.662	C	50	2.53	5.82	3-3	
3768.240	C	35	2.53	5.81	2-2	
3743.968	C	18	2.53	5.83	6-5	
*3748.998	C	50	2.53	5.83	5-4	
3758.044	C	15	2.53	5.82	4-3	
3768.734	C	15	2.53	5.81	3-2	
3744.490	C	18	2.53	5.83	5-6	
*3743.578	C	45	2.53	5.83	4-5	
3748.614	C	12	2.53	5.83	3-4	
3757.174	C	18	2.53	5.82	2-3	
3685.548	C	50w	2.53	5.88	6-5	a^5G-v^5F^o
*3686.803	C	45w	2.53	5.88	5-4	(44)
3687.252	C	50w	2.53	5.88	4-3	
*3686.18	B	5w	2.53	5.88	5-5	
*3686.803	C	45w	2.53	5.88	4-4	
*3686.18	B	5w	2.53	5.88	4-5	
3679.070	C	8	2.53	5.89	6-7	a^5G-z^3I^o
3688.11	B	7	2.53	5.88	5-6	(45)
*3694.13	B	4	2.53	5.87	4-5	
3687.545	C	20	2.53	5.88	6-6	
*3694.13	B	4	2.53	5.87	5-5	
3693.56	B	2	2.53	5.87	6-5	
*3656.261	C	50	2.53	5.91	5-4	a^5G-v^5D^o
3663.206	C	40	2.53	5.90	4-3	(46)
3666.642	C	25	2.53	5.90	3-2	
3668.029	C	15	2.53	5.90	2-1	
*3656.261	C	50	2.53	5.91	4-4	
3662.840	C	15	2.53	5.90	3-3	
3666.19	B	8	2.53	5.90	2-2	
3655.92	P		2.53	5.91	3-4	
3662.39	B	2	2.53	5.90	2-3	
3639.802	C	100	2.53	5.92	6-5	a^5G-u^5F^o
*3636.590	C	50	2.53	5.93	5-4	(47)
3641.830	C	50	2.53	5.92	4-3	
3648.997	C	50	2.53	5.92	3-2	
3653.912	C	45	2.53	5.91	2-1	
*3640.39	B	20	2.53	5.92	5-5	
*3636.590	C	50	2.53	5.93	4-4	
3641.470	C	15	2.53	5.92	3-3	
3648.534	C	15	2.53	5.92	2-2	
*3640.39	B	20	2.53	5.92	4-5	
3636.31	B	2	2.53	5.93	3-4	
3641.01	B	3+g?	2.53	5.92	2-3	
3619.460	C	10	2.53	5.94	6-7	a^5G-x^5H^o
3646.161	C	12	2.53	5.92	5-6	(48)
*3665.980	C	12	2.53	5.90	4-5	
3679.819	C	10	2.53	5.89	3-4	
3688.457	C	10	2.53	5.88	2-3	
3645.59	B	5	2.53	5.92	6-6	
*3665.980	C	12	2.53	5.90	5-5	
*3680.19	B	7	2.53	5.89	4-4	
3665.43	B	4	2.53	5.90	6-5	
*3680.19	B	7	2.53	5.89	5-4	
3689.302	C	8	2.53	5.88	4-3	
*3632.839	C	40	2.53	5.93	5-4	a^5G-u'^5F^o
m3605.41	P	Cr	2.53	5.96	4-3	(49)
3609.479	C	18	2.53	5.95	3-2	
3610.052	C	10	2.53	5.95	2-1	
*3632.839	C	40	2.53	5.93	4-4	
3605.05	P		2.53	5.96	3-3	
3609.04	B	4	2.53	5.95	2-2	
3632.46	B	1	2.53	5.93	3-4	
*3604.54	B	3	2.53	5.96	2-3	
3536.89	B	1	2.53	6.02	6-5?	a^5G-x^3G^o
*3565.55	B	2	2.53	5.99	5-4	(50)
*3537.25	B	4d?	2.53	6.02	5-5	
*3565.55	B	2	2.53	5.99	4-4	
*3537.25	B	4d?	2.53	6.02	4-5	
3565.15	B	3	2.53	5.99	3-4	
3445.10	B	7	2.53	6.13	6-5	a^5G-w^3G^o
*3455.602	C	35	2.53	6.11	5-4	(51)
3465.57	B	5	2.53	6.09	4-3	
*3445.618	C	40	2.53	6.13	5-5	
*3455.602	C	35	2.53	6.11	4-4	
3465.345	D	15	2.53	6.09	3-3	
*3445.618	C	40	2.53	6.13	4-5	
3455.281	C	10	2.53	6.11	3-4	
3464.82	B	5	2.53	6.09	2-3	
3433.598	C	50	2.53	6.13	6-6	a^5G-w^5G^o
*3436.187	C	50	2.53	6.13	5-5	(52)
*3441.439	C	35	2.53	6.12	4-4	
3447.430	C	30	2.53	6.11	3-3	
3453.328	C	35	2.53	6.11	2-2	
3435.679	C	10	2.53	6.13	6-5	
*3441.439	C	35	2.53	6.12	5-4	
3447.760	C	20	2.53	6.11	4-3	
3453.743	C	12	2.53	6.11	3-2	
3434.112	C	20	2.53	6.13	5-6	
*3436.187	C	50	2.53	6.13	4-5	
3441.115	C	9	2.53	6.12	3-4	
3447.015	C	12	2.53	6.11	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
*3435.819	C	6d	2.53	6.13	5-4	a^5G-x^3F^o
3432.31	B	8	2.53	6.13	4-3	(53)
3431.69	C	4	2.53	6.13	3-2	
*3435.819	C	6d	2.53	6.13	4-4	
3431.995	D	7	2.53	6.13	3-3	
3431.384	C	10	2.53	6.13	2-2	
3435.488	C	3	2.53	6.13	3-4	
3431.59	C	3	2.53	6.13	2-3	
3362.213	C	20	2.53	6.20	6-5	a^5G-t^5F^o
*3367.53	C	15w	2.53	6.20	5-4	(54)
*3379.825§	C	8	2.53	6.19	4-3	
3384.65	B	10w	2.53	6.18	3-2	
3388.71	B	10	2.53	6.17	2-1	
*3362.70	B	8	2.53	6.20	5-5	
*3367.53	C	15w	2.53	6.20	4-4	
3379.564	C	3w	2.53	6.19	3-3	
3384.24	B	3w	2.53	6.18	2-2	
*3362.70	B	8	2.53	6.20	4-5	
3061.652	C	5	2.53	6.56	6-5	a^5G-s^5F^o
3067.32	P		2.53	6.56	5-4	(55)
3071.69	P		2.53	6.55	4-3	
3074.47	B	3	2.53	6.55	3-2	
3076.58	B	3	2.53	6.54	2-1	
8348.28	A	30	2.70	4.17	3-4	a^5P-z^5D^o
8455.34	A	12	2.70	4.16	2-3	(56)
8555.54	A	5	2.70	4.14	1-2	
8450.26	A	15	2.70	4.16	3-3	
8548.83	A	12	2.70	4.14	2-2	
8643.03	A	12	2.70	4.13	1-1	
8543.72	A	10	2.70	4.14	3-2	
8636.26	A	10	2.70	4.13	2-1	
8707.42	A	7	2.70	4.12	1-0	
8296.90	A	4	2.70	4.18	2-1	a^5P-z^3P^o
8397.04	A	6	2.70	4.17	1-0	(57)
8303.19	A	6	2.70	4.18	1-1	
5325.821	C	50	2.70	5.06	3-2	a^5P-y^5F^o
5327.75	B	35	2.70	5.06	2-2	(58)
5330.228	C	40	2.70	5.06	1-2	
m5306.15	P	Cr	2.70	5.07	3-3	a^5P-x^5P^o
*5324.541	C	45	2.70	5.06	2-2	(59)
5341.458	C	30	2.70	5.05	1-1	
5322.676	C	30	2.70	5.06	3-2	
5338.971	C	65	2.70	5.05	2-1	
m5308.07	P	Cr	2.70	5.07	2-3	
5327.10	B	20	2.70	5.06	1-2	
5013.316	C	100	2.70	5.16	3-4	a^5P-y^5D^o
5067.714	C	75	2.70	5.13	2-3	(60)
5113.130	C	45	2.70	5.11	1-2	
5065.910	C	50	2.70	5.13	3-3	
5110.751	C	40	2.70	5.11	2-2	
5144.673	C	50	2.70	5.10	1-1	
5108.93	B	12	2.70	5.11	3-2	
5143.263	C	30	2.70	5.10	2-1	
5161.765	C	25	2.70	5.09	1-0	
4745.308	C	30	2.70	5.30	3-4	a^5P-x^5D^o
4806.255	C	25	2.70	5.26	2-3	(61)
4857.34	B	18	2.70	5.24	1-2	
4804.64	B	15	2.70	5.26	3-3	
4855.146	C	15	2.70	5.24	2-2	
4891.97	B	18	2.70	5.23	1-1	
4853.52	P		2.70	5.24	3-2	
4889.73	B	20	2.70	5.23	2-1?	
4909.87	B	6	2.70	5.21	1-0	
4697.063	C	40	2.70	5.32	3-2	a^5P-z^5S^o
*4898.615	C	50	2.70	5.32	2-2	(62)
4700.608	C	40	2.70	5.32	1-2	
4459.34	B	18w	2.70	5.46	3-3	a^5P-w^5P^o
4475.20	P		2.70	5.45	2-2	(63)
4473.782	C	40	2.70	5.45	3-2	
4487.46	B	5w	2.70	5.45	2-1	
4460.769	C	18	2.70	5.46	2-3	
4477.02	B	35w	2.70	5.45	1-2	
4295.757	C	25	2.70	5.57	3-3	a^5P-v^5P^o
4341.48	B	7	2.70	5.54	2-2	(64)
4382.853	C	20	2.70	5.51	1-1	
4340.130	C	18	2.70	5.54	3-2	
4381.112	C	35	2.70	5.51	2-1	
4297.050	C	15	2.70	5.57	2-3	
4343.163	C	18	2.70	5.54	1-2	
4108.400	C	6	2.70	5.70	3-3	a^5P-y^3D^o
4120.613	C	12	2.70	5.69	2-2	(65)
4127.643	C	8	2.70	5.69	1-1	
4119.44	B	3w	2.70	5.69	3-2	
4126.099	C	6	2.70	5.69	2-1	
4109.584	C	6	2.70	5.70	2-3	
4122.162	C	8	2.70	5.69	1-2	
4066.938	C	6	2.70	5.73	3-4	a^5P-w^5D^o
4077.089	C	12	2.70	5.72	2-3	(66)
4081.737	C	5	2.70	5.72	1-2	
4075.92	B	6	2.70	5.72	3-3	
4080.221	C	5	2.70	5.72	2-2	
4090.305	C	6	2.70	5.72	1-1	
3992.845	C	30	2.70	5.79	3-3	a^5P-u^5P^o
3979.798	C	10	2.70	5.80	2-2	(67)
3972.888	C	7	2.70	5.80	1-1	
3978.677	C	18	2.70	5.80	3-2	
3971.255	C	20	2.70	5.80	2-1	
3993.968	C	15	2.70	5.79	2-3	
3981.233	C	15	2.70	5.80	1-2	
3960.763	C	5	2.70	5.81	2-1	a^5P-z^3S^o
3962.19	B	3	2.70	5.81	1-1	(68)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
3841.277	C	50	2.70	5.91	3-4	a^5P-v^5D^o
3850.042	C	50	2.70	5.90	2-3	(69)
3855.571	C	30	2.70	5.90	1-2	
3848.983	C	40	2.70	5.90	3-3	
3854.220	C	50	2.70	5.90	2-2	
3857.631	C	20	2.70	5.90	1-1	
3853.176	C	12	2.70	5.90	3-2	
3856.281	C	15	2.70	5.90	2-1	
3855.386	C	12	2.70	5.90	1-0	
3819.564	C	40	2.70	5.93	3-4	a^5P-u^5P^o
3826.435	C	40	2.70	5.92	2-3	(70)
3836.070	C	12	2.70	5.92	1-2	
3825.390	C	20	2.70	5.92	3-3	
3834.735	C	15	2.70	5.92	2-2	
3843.03	B	10	2.70	5.91	1-1	
3833.71	B	3	2.70	5.92	3-2	
3840.70	B	4	2.70	5.91	2-1	
3815.433	C	30	2.70	5.93	3-4	a^5P-u'^5F^o†
3786.22	B	8	2.70	5.96	2-3	(71)
3793.42	B	3	2.70	5.95	1-2	
3755.81	B	7	2.70	5.98	3-2	a^5P-x^3P^o†
3756.83	B	2	2.70	5.98	2-2	(72)
3736.85	B	4w	2.70	6.01	1-1	a^5P-x^3D^o (73)
*3574.039	C	15	2.70	6.15	3-3	a^5P-t^5P^o
3603.574	C	12	2.70	6.12	2-2	(74)
3604.95	P		2.70	6.12	1-1	
3601.666	C	40	2.70	6.12	3-2	
*3603.745	C	12	2.70	6.12	2-1	
3574.935	C	10	2.70	6.15	2-3	
*3603.745	C	12	2.70	6.12	1-2	
3573.748	C	12	2.70	6.15	3-2	a^5P-y^5S^o
3573.643	C	18	2.70	6.15	2-2	(75)
3574.805	C	12	2.70	6.15	1-2	
3548.731	C	2	2.70	6.17	2-1	a^5P-t^5F^o (76)
3481.303	C	20	2.70	6.24	3-4	a^5P-u^5D^o
3473.613	C	15	2.70	6.25	2-3	(77)
3471.49	B	7	2.70	6.25	1-2	
3473.764	C	12	2.70	6.25	3-3	
3470.401	C	10	2.70	6.25	2-2	
3470.529	C	7	2.70	6.25	1-1	
3470.72	B	4	2.70	6.25	1-0	
3307.755	C	8	2.70	6.43	3-4	a^5P-t^5D^o†
3313.06	B	3	2.70	6.42	2-3	(78)
*3315.19	B	11	2.70	6.42	1-2?	
3196.37	P		2.70	6.56	3-4	a^5P-s^5P^o
3201.97	P		2.70	6.55	2-3	(79)
m3201.24	P	Cr+	2.70	6.55	3-3	
3204.55	P		2.70	6.55	3-2	
9900.87	A	15	2.97	4.22	2-2	a^3P-z^3P^o
9626.30	A	4	2.90	4.18	1-1	(80)
10197.05	A	3	2.97	4.18	2-1	
9752.84	A	4	2.90	4.17	1-0	
9362.06	A	10	2.90	4.22	1-2	
9313.55	A	8	2.86	4.18	0-1	
4619.551	C	40	2.97	5.65	2-2	a^3P-y^3P^o
4501.788	C	25	2.90	5.64	1-1	(81)
4623.761	C	25	2.97	5.64	2-1	
4501.113	C	35	2.90	5.64	1-0	
4498.730	C	35	2.90	5.65	1-2	
4432.175	C	40	2.86	5.64	0-1	
*4527.339	C	40	2.97	5.70	2-3	a^3P-y^3D^o
4424.075	C	10	2.90	5.69	1-2	(82)
*4363.95 §	B	7	2.86	5.69	0-1	
4491.858	C	35	2.97	5.72	2-2	a^3P-w^3D^o
4377.549	C	30	2.90	5.72	1-2	(83)
4331.238	C	20	2.86	5.72	0-1	
4387.380	C	10	2.97	5.79	2-3	a^3P-u^5P^o
*4362.133	C	12	2.90	5.80	1-2	(84)
4190.16	B	15	2.86	5.80	0-1	
4118.45	P		2.90	5.90	1-2	a^3P-v^5D^o (85)
3886.94	P		2.97	6.15	2-3	a^3P-t^5P^o (86)
3843.64	B	3	2.97	6.19	2-3	a^3P-t^5F^o (87)
m3819.57	P	Cr	2.97	6.21	2-3	a^3P-w^3D^o†
3748.18	B	2	2.90	6.20	1-2	(88)
3710.60	B	4	2.86	6.19	0-1	
*3676.33	B	18	2.97	6.33	2-2	a^3P-w^3P^o
*3604.54	B	3	2.90	6.33	1-1	(89)
*3681.691	C	12	2.97	6.33	2-1?	
3613.669	C	8	2.90	6.32	1-0	
3599.395	C	10	2.90	6.33	1-2	
3559.781	C	10	2.86	6.33	0-1	
3450.00	P		2.97	6.55	2-3	a^3P-s^5P^o
3453.84	P		2.97	6.55	2-2	(90)
3388.68	B	1	2.90	6.54	1-1	
3198.112	C	7	2.97	6.83	2-3	a^3P-v^3F^o (91)
3188.011	C	20w	2.97	6.85	2-3	a^3P-v^3D^o
3159.59	C	20w	2.90	6.81	1-2	(92)
3144.409	C	8w	2.86	6.78	0-1	
3216.70	B	5w	2.97	6.81	2-2	
3179.283	C	7w	2.90	6.78	1-1	
3239.14	B	1	2.97	6.76	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
7462.37	B	100	2.90	4.55	4-3	z^7P^o-e^7S
7400.23	B	150	2.89	4.55	3-3	(93)
7355.94	B	200	2.88	4.55	2-3	
5338.339	C	200w	2.90	5.22	4-5	z^7P^o-e^7D
5297.360	C	60w	2.89	5.22	3-4	(94)
5275.171	C	75w	2.88	5.22	2-3	
5329.13	D	65w	2.90	5.22	4-4	
5297.976	C	40w	2.89	5.22	3-3	
5275.689	C	50w	2.88	5.22	2-2	
5329.719	C	25w	2.90	5.22	4-3	
5298.44	P		2.89	5.22	3-2	
5276.03	D	75w	2.88	5.22	2-1	
4514.531	C	40	2.90	5.63	4-3	z^7P^o-f^7S
4491.678	C	30	2.89	5.63	3-3	(95)
4475.345	C	50	2.88	5.63	2-3	
4261.354	C	25	2.90	5.80	4-5	z^7P^o-f^7D
4272.910	C	12	2.89	5.78	3-4	(96)
4284.725	C	12	2.88	5.76	2-3	
4293.565	C	20	2.90	5.78	4-4	
4299.718	C	20	2.89	5.76	3-3	
4305.453	C	30	2.88	5.74	2-2	
*4320.592	C	30	(2.90 / 2.89)	5.76 / 5.74	4-3 / 3-2	
4319.641	C	40	2.88	5.73	2-1	
4129.21	E	(20n)	2.90	5.89	4-5	z^7P^o-g^7D
4110.87	E	(8)	2.89	5.89	3-4	(97)
4097.65	E	(5)	2.88	5.89	2-3	
4129.96	P		2.90	5.89	4-4	
4111.36	E	(6)	2.89	5.89	3-3	
4097.96	E	(7)	2.89	5.89	2-2	
4130.47	P		2.90	5.89	4-3	
4111.67	E	(3)	2.89	5.89	3-2	
4098.18	E	(7)	2.88	5.89	2-1	
8234.09	A	8	2.97	4.47	5-4	a^3H-z^3F^o
8261.95	A	8	2.95	4.45	4-3	(98)
4727.153	C	40	2.99	5.60	6-6	a^3H-z^3H^o
4693.949	C	45	2.97	5.60	5-5	(99)
4666.215	D	25	2.95	5.60	4-4	
4725.95	B	7	2.99	5.60	6-5	
4692.97	B	10	2.97	5.60	5-4	
4695.153	C	30	2.97	5.60	5-6	
4667.181	D	30	2.95	5.60	4-5	
4543.74	C	20	2.97	5.69	5-4	a^3H-y^3F^o
*4518.63	B	6	2.95	5.69	4-4	(100)
4495.04	B	4	2.95	5.70	4-3	a^3H-y^3D^o (101)
4442.268	C	30	2.99	5.77	6-5	a^3H-w^5F^o
4410.967	C	25	2.97	5.77	5-4	(102)
4393.534	C	12	2.95	5.76	4-3	
4387.496	C	30	2.99	5.80	6-5	a^3H-z^3G^o
4375.333	C	30	2.97	5.79	5-4	(103)
4363.134	C	12	2.95	5.78	4-3	
4374.158	C	40	2.99	5.81	6-5	a^3H-y^3G^o
4346.833	C	30	2.97	5.81	5-4	(104)
4325.075	C	40	2.95	5.81	4-3	
4255.503	C	25	2.99	5.89	6-7	a^3H-z^3I^o
*4240.705	C	30	2.97	5.88	5-6	(105)
4236.76	P		2.95	5.87	4-5	
4266.83	B	8	2.99	5.88	6-6	
4248.73	B	10	2.97	5.87	5-5	
4175.945	C	15	2.99	5.94	6-7	a^3H-x^5H^o
4185.345	C	10	2.97	5.92	5-6	(106)
4189.96	B	5	2.95	5.90	4-5	
4210.77	B	5	2.99	5.92	6-6	
4237.27	B	1	2.99	5.90	6-5	
4230.29	B	4	2.97	5.89	5-4	
4230.45	B	5	2.95	5.88	4-3	
4167.60	B	3	2.97	5.93	5-4	a^3H-u'^5F^o
4146.695	C	6	2.95	5.93	4-4	(107)
4123.387	C	10	2.99	5.96	6-6	a^3H-y^3H^o
4121.817	C	10	2.97	5.96	5-5	(108)
4104.867	C	10	2.95	5.96	4-4	
4146.47	B	4	2.99	5.96	6-5	
4099.016	C	6	2.97	5.98	5-6	
4101.163	D	8	2.95	5.96	4-5	
3510.536	C	15	2.99	6.50	6-7	a^3H-y^3I^o
3494.967	C	15	2.97	6.50	5-6	(109)
3488.453	C	10	2.95	6.49	4-5	
3513.70	B	2n	2.99	6.50	6-6	
*3503.36 §	B	1	2.97	6.49	5-5	
3481.536	C	18	2.99	6.53	6-6	a^3H-x^3H^o†
3467.715	C	16	2.97	6.53	5-5	(110)
3443.790	C	10	2.95	6.54	4-4	
3473.906	C	10	2.95	6.51	4-4	a^3H-1^o (111)
3346.018	C	12	2.99	6.66	6-5	a^3H-v^3G^o†
3346.71	B	10	2.97	6.66	5-4	(112)
3348.78	B	9	2.95	6.64	4-3	
3257.822	C	12	2.99	6.78	6-6	a^3H-w^3H^o†
3251.836	C	15	2.97	6.76	5-5	(113)
3245.542	C	12	2.95	6.76	4-4	
3259.975	C	10	2.99	6.77	6-6	a^3H-v^3H^o
3238.087	C	6	2.97	6.78	5-5	(114)
3237.729	C	10	2.95	6.77	4-4	
3253.26	B	4	2.99	6.78	6-5	
3250.58	B	4	2.97	6.77	5-4	
3244.89	B	1	2.97	6.77	5-6	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
3163.756	C	15	2.99	6.89	6-7	a^3H-x^3I^o
3155.149	C	12	2.97	6.88	5-6	(115)
3148.445	C	10	2.95	6.87	4-5	
3169.58	B	3	2.99	6.88	6-6	
3160.61	B	4	2.97	6.87	5-5	
3152.881	D	5	2.99	6.90	6-6	a^3H-u^3H^o
3141.891	D	5	2.97	6.90	5-5	(116)
m3039.74	P	Cr	2.99	7.05	6-5	a^3H-u^3G^o
3031.486	C	4	2.97	7.04	5-4	(117)
3024.681	C	2	2.95	7.03	4-3	
10486.24	A	20	3.00	4.17	4-4	b^5D-z^5D^o
10672.17	A	18	3.00	4.16	3-3	(118)
10816.91	A	8	3.00	4.14	2-2	
10647.66	A	12	3.00	4.16	4-3	
10821.62	A	12	3.00	4.14	3-2	
10957.19	A	12	3.00	4.13	2-1	
11044.64	A	5	3.00	4.12	1-0	
10509.96	A	10	3.00	4.17	3-4	
10667.53	A	15	3.00	4.16	2-3	
10801.37	A	12	3.00	4.14	1-2	
10929.90	A	10	3.00	4.13	0-1	
5712.778	C	100	3.00	5.16	4-4	b^5D-y^5D^o
5788.389	C	20	3.00	5.13	3-3	(119)
5843.24	B	25	3.00	5.11	2-2	
*5781.195	C	40	3.00	5.13	4-3	
5844.606	C	40	3.00	5.11	3-2	
5884.452	C	25	3.00	5.10	2-1	
5902.182	C	25	3.00	5.09	1-0	
5719.821	C	40	3.00	5.16	3-4	
5787.036	C	20	3.00	5.13	2-3	
5838.66	B	25	3.00	5.11	1-2	
5876.55	B	25	3.00	5.10	0-1	
*5556.19	B	10	3.00	5.22	4-4	b^5D-x^7P^o
5574.41	B	12	3.00	5.21	3-2	(120)
5512.69	B	10	3.00	5.24	3-2	b^5D-x^5D^o
*5556.19	B	10	3.00	5.22	2-1	(121)
5004.38	B	35w	3.00	5.46	4-3	b^5D-w^5P^o †
5028.00	B	15w	3.00	5.45	3-2	(122)
4981.30	P		3.00	5.48	3-3	b^5D-y^5G^o
4998.55	B	4	3.00	5.47	2-2	(123)
4980.30	P		3.00	5.48	2-3	
4755.137	C	6	3.00	5.59	4-5	b^5D-x^5F^o
4764.643	C	20	3.00	5.59	3-4	(124)
4770.670	C	12	3.00	5.59	2-3	
4774.557	C	8	3.00	5.58	1-2	
4759.74	B	6	3.00	5.59	4-4	
4771.57	B	10	3.00	5.59	3-3	
4777.57	B	7	3.00	5.56	2-2	
4779.87	B	3	3.00	5.58	1-1	
m4766.66	P	Cr	3.00	5.59	4-3	
*4778.50	B	2	3.00	5.56	3-2	
4566.602	C	7	3.00	5.70	4-3	b^5D-y^3D^o
4584.75	B	12	3.00	5.69	3-2	(125)
4590.69	B	8	3.00	5.69	2-1	
4571.105	C	25	3.00	5.70	3-3	
4583.89	B	15	3.00	5.69	2-2	
4587.86	B	8	3.00	5.69	1-1	
*4570.30	B	6	3.00	5.70	2-3	
4515.440	C	25	3.00	5.73	4-4	b^5D-w^5D^o †
4519.83	B	7	3.00	5.73	3-4	(126)
4530.12	P		3.00	5.72	2-3	
4458.538	C	45	3.00	5.77	4-5	b^5D-w^5F^o
4459.738	C	25	3.00	5.77	3-4	(127)
4465.357	C	35	3.00	5.76	2-3	
4464.907	C	25	3.00	5.76	1-2	
4462.774	C	30	3.00	5.76	0-1	
4455.45	B	7	3.00	5.77	4-4	
4466.165	C	25	3.00	5.76	3-3	
4467.561	C	30	3.00	5.76	2-2	
4464.669	C	25	3.00	5.76	1-1	
4468.38	B	7	3.00	5.76	3-2	
4403.372	C	35	3.00	5.80	4-5	b^5D-z^3G^o
4423.318	C	12	3.00	5.79	3-4	(128)
4433.968	C	20	3.00	5.78	2-3	
4419.10	B	10	3.00	5.79	4-4	
4434.75	B	10	3.00	5.78	3-3	
m4430.51	P	Cr	3.00	5.76	4-3	
4424.281	C	40	3.00	5.79	4-3	b^5D-u^5P^o
4411.093	C	40	3.00	5.80	3-2	(129)
4399.823	C	30	3.00	5.80	2-1	
4428.501	C	35	3.00	5.79	3-3	
4410.304	C	40	3.00	5.80	2-2	
4397.251	C	30	3.00	5.80	1-1	
4427.71	B	10	3.00	5.79	2-3	
4407.72	B	40d†	3.00	5.80	1-2	
4395.417	C	18	3.00	5.80	0-1	
4356.760	C	20	3.00	5.83	4-5	b^5D-x^5G^o
4368.252	C	20	3.00	5.83	3-4	(130)
4379.782	C	20	3.00	5.82	2-3	
4392.26	B	10	3.00	5.81	1-2	
4364.14	B	10	3.00	5.83	4-4	
4380.55	B	10	3.00	5.82	3-3	
4394.83	B	8	3.00	5.81	2-2	
4238.957	C	35	3.00	5.91	4-4	b^5D-v^5D^o
4252.243	C	10	3.00	5.90	3-3	(131)
4256.620	C	6	3.00	5.90	2-2	
4248.344	C	12	3.00	5.90	4-3	
4257.368	C	12	3.00	5.90	3-2	
4259.15	B	10	3.00	5.90	2-1	
4242.82	B	10	3.00	5.91	3-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
4217.626	C	30	3.00	5.92	4-5	b^5D-u^5F^o
4216.365	C	15	3.00	5.93	3-4	(132)
4222.732	C	20	3.00	5.92	3-3	
4230.481	C	25	3.00	5.92	1-2	
4235.96	B	15	3.00	5.91	0-1	
4233.47	B	7	3.00	5.92	3-3	
4232.866	C	10	3.00	5.92	2-2	
4237.710	C	12	3.00	5.91	1-1	
4211.349	C	15	3.00	5.93	3-4	b^5D-u'^5F^o
4177.17	B	3	3.00	5.95	0-1	(133)
4207.51	B	2	3.00	5.93	4-4	
3945.966	C	10	3.00	6.13	4-5	b^5D-w^5G^o
3945.495	C	9	3.00	6.13	4-4	(134)
3944.25	B	2	3.00	6.13	3-3	b^5D-x^3F^o †
3943.21	B	3	3.00	6.13	2-2	(135)
3915.843	C	40	3.00	6.15	4-3	b^5D-t^5P^o
3952.399	C	15	3.00	6.12	3-2	(136)
3953.163	C	16	3.00	6.12	2-1	
m3919.15	P	Cr	3.00	6.15	3-3	
3951.765	C	6	3.00	6.12	2-2	
3951.097	C	10	3.00	6.12	1-1	
3918.54	P		3.00	6.15	2-3	
*3949.64	B	6	3.00	6.12	1-2	
			3.00	6.12	0-1	
3917.598	C	15	3.00	6.15	3-2	b^5D-y^5G^o
3916.960	C	10	3.00	6.15	2-2	(137)
3914.96	B	4	3.00	6.15	1-2	
3649.365	C	50	3.00	6.20	4-5	b^5D-t^5F^o
3658.90	B	15w	3.00	6.20	3-4	(138)
3874.570	D	40w	3.00	6.19	2-3	
3679.222	C	50	3.00	6.16	1-2	
3663.660	C	20	3.00	6.17	0-1	
m3855.65	P	Cr	3.00	6.20	4-4	
3675.14	B	10n	3.00	6.19	3-3	
3681.214	C	40	3.00	6.16	2-2	
3885.064	C	20	3.00	6.17	1-1	
3661.856	C	10	3.00	6.16	3-2	
3604.798	C	50	3.00	6.24	4-4	b^5D-u^5D^o
3797.716	C	40	3.00	6.25	3-3	(139)
3793.269	C	30	3.00	6.25	2-2	
3790.226	C	6	3.00	6.25	1-1	
3794.606	C	25	3.00	6.25	4-3	
3793.679	C	30	3.00	6.25	3-2	
3793.137	C	30	3.00	6.25	2-1	
3790.454	C	16	3.00	6.25	1-0	
3807.926	C	15	3.00	6.24	3-4	
3797.136	C	20	3.00	6.25	2-3	
3791.376	C	30	3.00	6.25	1-2	
3788.664	C	20	3.00	6.25	0-1	
m3603.61	P	Cr	3.00	6.42	4-3	b^5D-t^5D^o
3607.92	P		3.00	6.42	3-2	(140)
3608.58	P		3.00	6.42	2-1	
3607.25	P		3.00	6.42	1-0	
3460.430	C	25	3.00	6.56	4-5	b^5D-s^5F^o †
3469.590	C	15	3.00	6.56	3-4	(141)
3474.67	B	8	3.00	6.55	2-3	
3477.161	C	7	3.00	6.55	1-2	
3479.14	B	5	3.00	6.54	0-1	
*3467.022	C	12	3.00	6.56	4-4	
3475.36	P		3.00	6.55	3-3	
3476.77	B	7	3.00	6.55	2-2	
3480.26	B	4	3.00	6.54	1-1	
6947.20	A	35	3.09	4.47	5-4	a^3G-z^3F^o
6978.88	A	25	3.07	4.45	4-3	(142)
9035.66	A	20	3.07	4.43	3-2	
6835.67	A	10	3.07	4.47	4-4	
8925.75	A	10	3.07	4.45	3-3	
6766.28	P		3.07	4.47	3-4	
4922.367	C	300	3.09	5.60	5-8	a^3G-z^3H^o
4887.013	C	150	3.07	5.60	4-5	(143)
4870.796	C	100	3.07	5.60	3-4	
4920.945	C	50	3.09	5.60	5-5	
4865.957	C	50	3.07	5.60	4-4	
4838.857	C	40	3.09	5.64	5-6	a^3G-y^5H^o
4814.285	C	35	3.07	5.84	4-5	(144)
4810.733	C	35	3.07	5.63	3-4	
4847.177	C	16	3.09	5.64	5-5	
4825.51	B	10	3.07	5.63	4-4	
4822.08	B	5	3.07	5.63	3-3	
4756.113	C	100	3.09	5.89	5-4	a^3G-y^3F^o
4737.350	C	75	3.07	5.68	4-3	(145)
4730.711	C	50	3.07	5.87	3-2	
4734.416	C	35	3.07	5.69	4-4	
4723.03	B	15	3.07	5.68	3-3	
4710.24	B	6	3.07	5.89	3-4	
*4696.815	C	50	3.07	5.70	4-3	a^3G-y^3D^o
4698.947	C	20	3.07	5.89	3-2	(146)
4684.605	C	12	3.07	5.70	3-3	
4856.189	C	30	3.07	5.72	4-3	a^3G-w^5P^o †
4646.495	C	15	3.07	5.72	3-2	(147)
4614.15	B	12	3.09	5.77	5-5	a^3G-w^5F^o
4581.063	C	10	3.07	5.77	4-4	(148)
4574.45	B	6	3.07	5.76	3-3	
4576.76	B	8	3.07	5.78	3-2	
4555.09	B	(10†)	3.09	5.80	5-5	a^3G-z^3G^o
*4543.631	C	35	3.07	5.79	4-4	(149)
4541.513	C	25	3.07	5.78	3-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
4540.719	C	50	3.09	5.81	5-5	a^3G-y^3G^o
4511.903	C	60	3.07	5.81	4-4	(150)
4500.295	C	40	3.07	5.81	3-3	
4513.21	B	8+g	3.07	5.81	4-3	
4505.22	B	1	3.09	5.83	5-5	a^3G-x^5G^o
4484.68	B	6	3.07	5.82	3-3	(151)
4425.129	C	12	3.09	5.88	5-6	a^3G-z^3I^o
4406.26	B	18	3.07	5.87	4-5	(152)
4364.87	B	10	3.09	5.92	5-6	a^3G-x^5H^o †
4366.33	B	4	3.07	5.90	4-5	(153)
4271.061	C	15	3.09	5.96	5-8	a^3G-y^3H^o
4289.951	C	12	3.07	5.96	4-5	(154)
4262.38	B	8	3.07	5.96	3-4	
4209.756	C	15	3.09	6.02	5-5	a^3G-x^3G^o
4224.514	C	18	3.07	5.99	4-4	(155)
*4231.573	C	25	3.07	5.99	3-3	
4249.81	P		3.09	5.99	5-4	
4164.895	C	12	3.07	6.02	4-5	
4213.179	C	10	3.07	5.99	3-4	
4060.56	B	2	3.09	6.12	5-5	a^3G-w^3G^o †
4057.19	B	3	3.07	6.12	4-5	(156)
4060.62	B	8d†	3.07	6.11	3-4	
3566.23	B	4	3.09	6.53	5-6	a^3G-x^3H^o
3571.97	P		3.07	6.53	4-5	(157)
3553.966	C	5	3.07	6.54	3-4	
3442.56	B	1	3.09	6.68	5-5	a^3G-v^3G^o
3425.96	B	4	3.07	6.68	4-5	(158)
*3349.323§	C	6	3.09	6.76	5-6	a^3G-w^3H^o †
3343.343	C	5	3.07	6.76	4-5	(159)
3343.227	C	5	3.07	6.76	3-4	
3351.598	C	8	3.09	6.77	5-6	a^3G-v^3H^o
3328.80	B	4	3.07	6.76	4-5	(160)
3334.925	C	6	3.07	6.77	3-4	
3344.50	B	4	3.09	6.76	5-5	
3313.721	C	3	3.09	6.82	5-4	a^3G-w^3F^o
3309.82	B	4	3.07	6.80	4-3	(161)
3298.316	C	7	3.07	6.82	4-4	
3302.86	B	6	3.07	6.80	3-3	
3236.50	B	4	3.09	6.90	5-6	a^3G-u^3H^o
3227.23	B	2	3.07	6.90	4-5	(162)
3119.246	C	5	3.09	7.05	5-5	a^3G-u^3G^o
3110.860	C	5	3.07	7.04	4-4	(163)
3109.336	C	8	3.07	7.03	3-3	
3115.51	B	1	3.07	7.03	4-3	
3105.57	B	2	3.07	7.05	4-5	
3104.70	B	2	3.07	7.04	3-4	
*3060.63	B	2	3.09	7.12	5-5	a^3G-t^3G^o †
3058.17	B	3	3.07	7.11	4-4	(164)
3047.455	C	4	3.07	7.12	4-5	
3052.239	C	6	3.07	7.11	3-4	
9059.74	A	5	3.11	4.47	4-4	a^3F-z^3F^o
9148.45	A	6	3.10	4.45	3-3	(165)
9208.29	A	25	3.11	4.45	4-3	
9263.97	A	20	3.10	4.43	3-2	
4954.811	C	60	3.11	5.60	4-5	a^3F-z^3H^o
4936.334	C	150	3.10	5.60	3-4	(166)
4953.714	D	25	3.11	5.60	4-4	
4880.08	B	25	3.11	5.64	4-5	a^3F-y^5H^o
4874.651	C	20	3.10	5.63	3-4	(167)
4787.74	B	5	3.11	5.69	4-4	a^3F-y^3F^o
4764.70	P		3.10	5.68	3-3	(168)
4754.743	C	20	3.08	5.67	2-2	
4801.030	C	75	3.11	5.68	4-3	
4792.513	C	75	3.10	5.67	3-2	
4747.00	B	4	3.08	5.68	2-3	
4761.243	C	10	3.11	5.70	4-3	a^3F-y^3D^o
4759.907	C	10	3.10	5.69	3-2	(169)
4729.733	C	35	3.08	5.69	2-1†	
4717.888	C	10	3.11	5.72	4-3	a^3F-w^5D^o
4706.102	C	25	3.10	5.72	3-2	(170)
4680.870	C	35	3.08	5.72	2-1	
4701.92	B	5	3.10	5.72	3-3	
4669.87	B	10	3.08	5.72	2-2	
4640.55	B	4	3.11	5.77	4-4	a^3F-w^5F^o
4638.180	C	35	3.10	5.78	3-3	(171)
4599.25	B	1	3.08	5.76	2-2	
4634.59	B	5	3.10	5.76	3-2	
4599.00	B	6	3.08	5.76	2-1	
4625.30	B	3	3.10	5.77	3-4	
4598.90	B	3	3.08	5.76	2-3	
4584.095	C	20	3.11	5.80	4-5	a^3F-z^3G^o
4588.138	C	20	3.10	5.79	3-4	(172)
4563.657	C	25	3.08	5.76	2-3	
4601.15	B	20	3.11	5.79	4-4	
4596.441	C	20	3.10	5.78	3-3	
4569.530	C	20	3.11	5.81	4-5	a^3F-y^3G^o
4554.830	C	25	3.10	5.81	3-4	(173)
4533.00	B	12	3.08	5.81	2-3	
4569.844	C	30	3.11	5.81	4-4	
4556.189	C	40	3.10	5.81	3-3	
4570.98	B	20	3.11	5.81	4-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
4527.471	C	30	3.08	5.60	2-1†	a^3F-u^5P^o (174)
4513.89	B	3	3.08	5.61	2-1	a^3F-z^3S^o (175)
4332.569	C	15	3.11	5.98	4-3	a^3F-u'^5F^o
4325.65	B	6	3.10	5.95	3-2	(176)
4296.30	B	6	3.08	5.95	2-1	
4358.66	B	10	3.10	5.93	3-4	
4321.617	C	8	3.11	5.96	4-5	a^3F-y^3H^o
4312.489	C	5	3.10	5.96	3-4	(177)
4234.515	C	12	3.11	6.02	4-5	a^3F-x^3G^o
•4282.133	C	12	3.10	5.99	3-4	(178)
•4240.705	C	30	3.08	5.99	2-3	
4142.47	B	5	3.11	6.09	4-3	a^3F-x^3D^o
•4179.257	C	30	3.10	6.05	3-2	(179)
4103.85 †	B	4	3.11	6.13	4-5	a^3F-w^3G^o †
4108.05	B	4	3.10	8.11	3-4	(180)
4092.174	C	6	3.08	6.09	2-3	
3374.93	B	4	3.11	6.76	4-5	a^3F-w^3H^o
3373.96	B	2	3.10	6.76	3-4	(181)
3362.07	B	3	3.11	6.76	4-4	
3329.053	C	8	3.11	6.62	4-4	a^3F-w^3F^o
3332.879	C	7	3.10	6.60	3-3	(182)
3326.590	C	10	3.08	6.79	2-2	
3321.19	B	2	3.10	6.62	3-4	
m3314.56	P	Cr+	3.08	6.80	2-3	
3132.820	C	6	3.11	7.05	4-5	a^3F-u^3G^o
3131.311	C	8	3.10	7.04	3-4	(183)
3119.706	C	5	3.08	7.03	2-3	
3138.203	C	4	3.11	7.04	4-4	
3135.91	B	3	3.10	7.03	3-3	
3073.879	C	10	3.11	7.13	4-5	a^3F-t^3G^o
3077.831	C	10	3.10	7.11	3-4	(184)
3065.067	C	10	3.08	7.11	2-3	
3064.59	B	4	3.11	7.11	4-4	
3060.72	B	5	3.10	7.11	3-3	
6062.75	B	50	3.16	5.22	6-5	z^7F^o-e^7D
5962.84	B	40	3.15	5.22	5-4	(185)
5916.73	B	30	3.13	5.22	4-3	
5863.96	B	25	3.11	5.22	3-2	
5981.96	B	25	3.15	5.22	5-5	
5915.93	B	25	3.13	5.22	4-4	
5798.00	P		3.09	5.22	1-1	
5797.53	P		3.09	5.22	1-2	
4716.429	C	75	3.18	5.80	6-5	z^7F^o-f^7D
4708.040	C	60	3.15	5.78	5-4	(186)
4696.456	C	60	3.13	5.76	4-3	
4689.374	C	65	3.11	5.74	3-2	
4680.49	B	50	3.10	5.73	2-1	
4689.336	C	50	3.15	5.80	5-5	
4666.518	C	55	3.13	5.78	4-4	
4664.798	C	80	3.11	5.76	3-3	
4663.832	C	55	3.10	5.74	2-2	
4663.328	C	40	3.09	5.73	1-1	
4688.473	C	10	3.13	5.80	4-5	
4633.288	C	30	3.11	5.78	3-4	
4639.538	D	35	3.10	5.78	2-3	
4648.808	C	20	3.09	5.74	1-2	
4654.736	C	35	3.08	5.73	0-1	
9009.95	A	100	3.31	4.68	3-2	z^5P^o-e^5S
9017.10	A	75	3.31	4.66	2-2	(187)
9021.69	A	50	3.31	4.68	1-2	
5791.005	C	100	3.31	5.44	3-4	z^5P^o-e^5D
5787.99	C	75	3.31	5.44	2-3	(188)
5785.820	C	50	3.31	5.44	1-2	
5785.003	C	50	3.31	5.44	3-3	
5783.932	C	50	3.31	5.44	2-2	
5783.112	C	50	3.31	5.44	1-1	
5780.97	B	10	3.31	5.44	3-2	
•5781.195	C	40	3.31	5.44	2-1	
5781.808	C	40	3.31	5.44	1-0	
5212.27	B	18w	3.31	5.87	3-2	z^5P^o-f^5S
5214.64	B	15w	3.31	5.87	2-2	(189)
5216.17	B	12w	3.31	5.87	1-2	
4536.55	B	4	3.31	6.03	3-4	z^5P^o-f^5D
•4572.16	B	7w	3.31	6.01	2-3	(190)
•4595.05	B	5w	3.31	5.99	1-2	
•4570.30	B	6	3.31	6.01	3-3	
4593.84	B	6v	3.31	5.99	2-2	
4604.58	B	5w	3.31	5.99	2-1	
5400.606	C	50	3.36	5.65	2-2	b^3P-y^3P^o
•5391.350	C	35	3.35	5.64	1-1	(191)
5405.004	C	35	3.36	5.64	2-1	
5390.394	C	40	3.35	5.64	1-0	
5386.976	C	75	3.35	5.65	1-2	
5387.573	C	35	3.35	5.64	0-1	
m5275.11	P	Cr	3.36	5.70	2-3	b^3P-y^3D^o
5280.389	C	30	3.35	5.69	1-2	(192)
5285.63	B	15	3.35	5.69	0-1	
5293.383	C	15	3.36	5.69	2-2	
5289.27	B	10	3.35	5.69	1-1	
5231.753	C	50	3.36	5.72	2-3	b^3P-w^5D^o
5214.127	C	30	3.35	5.72	1-2	(193)
•5234.541	C	45	3.35	5.72	0-1	
5228.891	C	50	3.36	5.72	2-2	
5228.082	C	50	3.35	5.72	1-1	
5240.94	B	20	3.36	5.72	2-1	
4761.73	B	5	3.36	5.95	2-2	b^3P-u'^5F^o†
4752.87	B	10	3.35	5.95	1-1	(194)
4707.754	C	15	3.36	5.98	2-2	b^3P-x^3P^o
4725.87	B	5	3.35	5.97	1-1	(195)
4736.13	B	5	3.36	5.97	2-1	
4749.25	B	1w	3.35	5.95	1-0	
4697.395	C	15	3.35	5.96	1-2	
4722.741	D	10	3.35	5.97	0-1	
4526.106	C	40	3.36	6.09	2-3	b^3P-x^3D^o
4575.121	C	25	3.35	6.05	1-2	(196)
4584.934	C	15	3.36	6.05	2-2	
4492.312	C	40	3.36	6.11	2-1	b^3P-y^3S^o
4482.876	C	40	3.35	6.11	1-1	(197)
4480.363	C	30	3.35	6.11	0-1	
4336.799	C	15	3.36	6.21	2-3	b^3P-w^3D^o
4345.065	C	15	3.35	6.20	1-2	(198)
4357.525	C	15	3.35	6.19	0-1	
4353.983	D	15	3.36	6.20	2-2	
4359.992	C	20	3.35	6.19	1-1	
4368.89	B	6	3.36	6.19	2-1	
4266.44	B	2w	3.36	6.25	2-2	b^3P-u^5D^o (199)
3153.54	B	5	3.36	7.27	2-2	b^3P-t^3P^o
3164.06	B	1	3.35	7.26	1-1	(200)
5234.941	C	150•	3.44	5.80	5-5	z^7D^o-f^7D
5225.032	C		3.41	5.78	4-4	(201)
5224.062	C	40	3.39	5.76	3-3	
5220.918	C	40	3.37	5.73	1-1	
5273.439	C	25	3.44	5.78	5-4	
5265.160	C	60	3.41	5.76	4-3	
5254.918	C	100	3.39	5.74	3-2	
5243.395	C	75	3.38	5.73	2-1	
5177.430	C	75	3.41	5.80	4-5	
5184.590	C	100	3.39	5.78	3-4	
5193.000	C	100	3.38	5.78	2-3	
5200.168	C	50	3.37	5.74	1-2	
5027.68	P		3.44	5.89	5-5	z^7D^o-g^7D
4948.64	P		3.39	5.89	3-3	(202)
4900.83	P		3.37	5.89	1-1	
4983.63	P		3.41	5.89	4-5	
4947.91	P		3.39	5.89	3-4	
4900.50	P		3.37	5.89	1-2	
5702.307	C	60	3.43	5.60	5-6	b^3G-z^3H^o
5664.040	C	40	3.42	5.60	4-5	(203)
5626.645	C	50	3.41	5.60	3-4	
•5700.514	C	40	3.43	5.60	5-5	
5480.502	C	45	3.43	5.69	5-4	b^3G-y^3F^o
5463.974	C	40	3.42	5.68	4-3	(204)
5442.413	C	35	3.41	5.67	3-2	
5448.76	B	25	3.42	5.69	4-4	
5432.347	C	25	3.41	5.68	3-3	
5292.865	C	10	3.43	5.77	5-5	b^3G-w^5F^o
5257.07	B	10	3.42	5.77	4-4	(205)
5238.63	B	10	3.41	5.78	3-3	
5215.29	B	20	3.43	5.80	5-5	b^3G-z^3G^o
5208.52	P		3.42	5.79	4-4	(206)
5193.486	C	35	3.41	5.78	3-3	
•5237.358	B	2	3.43	5.79	5-4	
5222.39	B	10	3.42	5.78	4-3	
•5177.83	B	10	3.41	5.79	3-4	
5196.443	C	100•	3.43	5.81	5-5	b^3G-y^3G^o
5186.237	C	150	3.42	5.81	4-4	(207)
5139.654	C	100	3.41	5.81	3-3	
5196.57	B	100•	3.43	5.81	5-4	
5167.98	B	30	3.42	5.81	4-3	
5137.94	B	12	3.41	5.81	3-4	
4048.29	B	40	3.43	5.98	5-6	b^3G-y^3H^o
4851.465	C	25	3.42	5.96	4-5	(208)
4831.627	C	15	3.41	5.98	3-4	
4826.81	B	8	3.42	8.09	4-3	b^3G-x^3D^o (209)
4802.51	B	7	3.43	6.12	5-5	b^3G-w^3G^o †
4596.38	B	6	3.42	6.11	4-4	(210)
4585.72	B	3	3.43	6.13	5-5	b^3G-w^5G^o
4560.28	B	1	3.41	6.11	3-3	(211)
•4595.05	B	5w	3.43	8.12	5-4	
4585.088	C	18	3.43	8.13	5-4	b^3G-x^3F^o
4555.30	B	15	3.42	6.13	4-3†	(212)
4532.75	B	10	3.41	6.13	3-2	
3983.237	C	7	3.43	6.53	5-6	b^3G-x^3H^o †
3970.07	B	7	3.42	6.53	4-5	(213)
•3941.15	B	3	3.41	6.54	3-4	
3606.629	C	10	3.43	6.68	5-5	b^3G-w^3G^o †
3812.250	C	12	3.42	6.68	4-4	(214)
3814.822	C	12	3.41	6.84	3-3	
3736.45	B	4	3.43	6.74	5-4	b^3G-q^5F^o † (215)
3693.09	B	5	3.43	6.78	5-6	b^3G-w^3H^o †
3689.63	B	6	3.42	6.76	4-5	(216)
3863.87	B	4n	3.41	6.76	3-4	
3695.86	B	5	3.43	6.77	5-6	b^3G-v^3H^o
3671.94	B	1	3.42	6.76	4-5	(217)
3673.59	B	2	3.41	6.77	3-4	
3345.14	B	5	3.43	7.12	5-5	b^3G-t^3G^o †
3345.36	B	4	3.42	7.11	4-4	(218)
3293.81	B	5	3.43	7.18	5-4	b^3G-u^3F^o
3277.66	B	4	3.42	7.19	4-3	(219)
3270.70	B	3	3.41	7.18	3-2	
3229.204	C	10	3.43	7.26	5-6	b^3G-t^3H^o †
3219.616	D	8	3.42	7.25	4-5	(220)
3211.309	C	6	3.41	7.25	3-4	
11157.03	A	25	3.45	4.55	4-3	y^7P^o-e^7S
11015.63	A	30	3.43	4.55	3-3	(221)
11905.83	A	25	3.42	4.55	2-3	
6976.46	B	300	3.45	5.22	4-5	y^7P^o-e^7D
6934.13	C	200	3.43	5.22	3-4	(222)
6881.64	B	100	3.42	5.22	2-3	
6979.82	C	150	3.45	5.22	4-4	
6935.34	D	150	3.43	5.22	3-3	
6863.48	D	75	3.42	5.22	2-2	
6960.91	B	50	3.45	5.22	4-3	
6936.04	B	100	3.43	5.22	3-2	
6883.04	D	150	3.42	5.22	2-1	
5609.19	B	35	3.43	5.63	3-3	y^7P^o-f^7S
5580.51	B	25	3.42	5.63	2-3	(223)
5508.88	P		3.43	5.67	3-2	y^7P^o-f^5S (224)
5255.132	C	125	3.45	5.80	4-5	y^7P^o-f^7D
5273.010	C	50	3.43	5.78	3-4	(225)
5287.166	C	40	3.42	5.76	2-3	
5304.211	C	40	3.45	5.78	4-4	
5312.878	C	50	3.43	5.76	3-3	
5318.775	C	40	3.42	5.74	2-2	
m5345.81	P	Cr	3.45	5.76	4-3	
5344.761	C	20	3.43	5.74	3-2	
5340.437	C	35	3.42	5.73	2-1	
9730.32	A	25	3.54	4.80	3-3	a^3D-z^3D^o †
9949.06	A	20	3.54	4.78	2-2	(226)
10080.32	A	15	3.54	4.76	1-1	
5736.554	C	30	3.54	5.69	3-4	a^3D-y^3F^o
5772.676	C	25	3.54	5.66	2-3	(227)
m5783.15	P	Cr	3.54	5.67	1-2	
•5700.514	C	40	3.54	5.70	3-3	a^3D-y^3D^o
5736.638	C	15	3.54	5.69	2-2	(228)
m5746.32	P	Cr	3.54	5.69	1-1	
4635.68	B	10	3.54	6.09	3-3	a^3D-x^3D^o (229)
4775.141	C	10	3.54	6.13	3-4†	a^3D-w^3G^o †
4797.69	B	15	3.54	6.11	2-3	(230)
4809.32	B	10	3.54	6.11	1-2	
4764.294	C	50	3.54	6.13	3-4	a^3D-x^3F^o
4767.660	C	30	3.54	6.13	2-3	(231)
4766.83	B	35	3.54	6.13	1-2	
4757.591	C	18	3.54	6.13	3-3	
4767.280	D	25	3.54	8.13	2-2	
4731.14	B	8w	3.54	6.15	3-3	a^3D-t^5P^o (232)
4622.491	C	35	3.54	6.21	3-3	a^3D-w^3D^o
m4649.54	P	Cr	3.54	6.20	2-2	(233)
4665.902	C	35	3.54	6.19	1-1	
4413.866	C	40	3.54	6.33	3-2	a^3D-w^3P^o
4430.486	C	30	3.54	6.33	2-1	(234)
4443.707	C	30	3.54	6.33	1-0	
4432.697	C	10	3.54	6.33	2-2	
4429.938	C	20	3.54	6.33	1-1	
3520.55	B	0	3.54	7.04	3-4	a^3D-u^3G^o (235)
3385.31	B	6	3.54	7.18	3-4	a^3D-u^3F^o
3386.50	B	5	3.54	7.19	2-3	(236)
3390.77	B	5	3.54	7.18	1-2	
3391.11	B	1	3.54	7.18	2-2	
5261.754	C	50	3.68	6.03	3-4	y^5P^o-f^5D †
5240.468	C	60	3.65	6.01	2-3	(237)
5307.281	C	30	3.68	6.01	3-3	
3902.108	C	10	3.65	6.82	2-3	y^5P^o-e^3D (238)
5696.330	C	100	3.86	6.03	5-4	z^5F^o-f^5D
5694.730	C	75	3.84	6.01	4-3	(239)
5682.483	C	75	3.82	5.99	3-2	
5642.362	C	50	3.84	6.03	4-4	
5649.371	C	50	3.82	6.01	3-3	
5648.18	F	(1)	3.81	5.99	2-2	
5597.67	B	18	3.82	6.03	3-4	
5615.54	P		3.81	6.01	2-3	
4275.973	C	15	3.86	6.75	5-5	z^5F^o-e^5F †
4260.19	B	5w	3.84	6.74	4-4	(240)
4291.964	C	15	3.86	6.74	5-4	
•4269.03	B	5w	3.82	6.71	3-3	
4244.33	B	3w	3.84	6.75	4-5	
4148.52	B	2	3.84	6.82	4-3	z^5F^o-e^3D †
4163.94	B	2	3.82	6.79	3-2	(241)
4174.795	C	10	3.81	6.77	2-1†	
6039.38	B	18	3.83	5.88	6-6	a^3I-z^3I^o
6047.665	D	18	3.83	5.87	5-5	(242)
5746.432	C	25	3.83	5.98	7-6	a^3I-y^3H^o
5791.791	C	20	3.83	5.96	6-5	(243)
5801.14	B	30	3.83	5.96	5-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
*4621.963	C	45•	3.83	6.50	7-7	a^3I-y^3I^o (244)
4625.925	C	20	3.83	6.50	6-6	
4642.011	C	10	3.83	6.49	5-5	
4625.65	B	1	3.83	6.50	7-6	
4640.67	B	1	3.83	6.49	6-5	
4614.523	C	12	3.83	6.51	5-4	a^3I-i^1° (245)
4571.83	B	12	3.83	6.53	7-6	a^3I-x^3H^o
4578.334	C	12	3.83	6.53	6-5	(246)
4563.245	C	15	3.83	6.54	5-4	
*4572.16	B	7w	3.83	6.53	6-6	
4579.59	B	2	3.83	6.53	5-5	
4573.38	B	1gn†	3.83	6.53	5-6	
4263.141	C	35	3.83	6.73	7-8	a^3I-z^3K^o †
4280.405	C	25	3.83	6.72	6-7	(247)
4297.738	C	30	3.83	6.71	5-6	
4193.662	C	40	3.83	6.78	7-6	a^3I-w^3H^o
4209.368	C	20	3.83	6.76	6-5	(248)
*4221.572	C	25	3.83	6.76	5-4	
4193.89	B	3	3.83	6.78	6-6	
4194.951	C	20	3.83	6.78	5-6	
4197.234	C	20	3.83	6.77	7-6	a^3I-v^3H^o
*4186.359	C	15	3.83	6.78	6-5	(249)
4208.357	C	15	3.83	6.77	5-4	
4197.47	B	2	3.83	6.77	6-6	
4198.525	C	35	3.83	6.77	5-6	
4179.05	B	7	3.83	6.79	7-7	a^3I-z^1K^o
*4179.257	C	30	3.83	6.79	6-7	(250)
4039.100	C	20	3.83	6.89	7-7	a^3I-x^3I^o
4048.780	C	20	3.83	6.88	6-6	(251)
4058.772	C	30	3.83	6.87	5-5	
4048.56	P		3.83	6.88	7-6	
4057.81	B	8	3.83	6.87	6-5	
4039.30	B	5	3.83	6.89	6-7	
4049.783	C	5	3.83	6.88	5-6	
m3605.52	P	Cr	3.83	7.26	7-6	a^3I-t^3H^o
3608.401	C	10	3.83	7.25	6-5	(252)
3613.609	C	4	3.83	7.25	5-4	
3458.090	C	10	3.83	7.40	7-7	a^3I-w^3I^o
*3467.023	C	12	3.83	7.39	6-6	(253)
3453.23	B	10	3.83	7.41	5-5	
3376.397	C	10	3.83	7.49	7-7	a^3I-v^3I^o
3391.372	C	10	3.83	7.47	6-6	(254)
3403.59	B	8	3.83	7.46	5-5	
3316.503	C	5	3.83	7.55	7-6	a^3I-s^3H^o
3336.97	B	4	3.83	7.53	6-5	(255)
3353.026	C	6	3.83	7.51	5-4	
6643.023	C	15	3.83	5.69	3-4	b^3D-y^3F^o
6677.24	B	10	3.83	5.68	2-3	(256)
6701.64	B	10	3.83	5.67	1-2	
5729.203	C	20	3.83	5.98	3-2	b^3D-x^3F^o
5777.77	B	25	3.83	5.97	2-1	(257)
5371.48	B	50	3.83	6.13	3-4	b^3D-x^3F^o
5368.546	C	35	3.83	6.13	2-3	(258)
*5373.715	C	30	3.83	6.13	1-2	
5362.98	B	25	3.83	6.13	3-3	
5367.78	B	10	3.83	6.13	2-2	
4930.183	C	30	3.83	6.33	3-2	b^3D-w^3P^o
4944.59	B	22	3.83	6.33	2-1	(259)
4966.80	B	25	3.83	6.32	1-0	
4934.89	B	15	3.83	6.33	2-2	
4949.58	B	12	3.83	6.33	1-1	
4146.20	B	6	3.83	6.80	3-4	b^3D-v^3F^o
4109.98	B	1	3.83	6.83	2-3	(260)
4093.06	B	4	3.83	6.85	1-2	
4106.71	B	0	3.83	6.83	3-3	
4089.63	B	2	3.83	6.85	2-2	
4131.360	C	10	3.83	6.82	3-4	b^3D-w^3F^o
4152.775	C	10	3.83	6.80	2-3	(261)
4175.227	C	8	3.83	6.79	1-2	
4149.45	B	5	3.83	6.80	3-3	
4171.675	C	12	3.83	6.79	2-2	
4168.31	B	2	3.83	6.79	3-2	
3907.778	C	7	3.83	6.99	3-2	b^3D-v^3P^o
3890.82	B	4	3.83	7.00	2-1	(262)
3510.40	B	5	3.83	7.34	3-4	b^3D-t^3F^o
3521.53	B	3	3.83	7.34	2-3	(263)
3531.44	B	4	3.83	7.33	1-2	
7185.50	B	20	3.88	5.59	5-5	a^5F-x^5P^o †
7188.06	B	18	3.87	5.59	4-4	(264)
7196.83	B	18	3.87	5.59	3-3	
7207.85	B	10	3.87	5.58	2-2	
7218.57	B	9	3.87	5.58	1-1	
6529.197	D	18	3.88	5.77	5-5	a^5F-w^5F^o
6516.026	D	12	3.87	5.77	4-4	(265)
m4836.18	P	Cr+	3.88	6.43	5-4	a^5F-t^5D^o
4840.22	F	(1)	3.87	6.42	4-3	(266)
4841.52	P		3.87	6.42	3-2	
4841.73	B	12	3.87	6.42	1-0†	
4833.54	P		3.87	6.43	4-4	
4465.15	B	20	3.88	6.64	5-4	a^5F-s^5D^o †
4490.56	B	8w	3.87	6.62	4-3	(267)
4507.95	B	4N	3.87	6.61	3-2	
3989.986	C	15	3.88	6.97	5-6	a^5F-y^5G^o †
4001.444	C	25	3.87	6.96	4-5	(268)
*4012.49 §	B	20	3.87	6.95	3-4	
4022.263	C	18	3.87	6.94	2-3	
4031.130	D	7	3.87	6.93	1-2	
4003.921	D	7	3.88	6.96	5-5	
4014.668	C	10	3.87	6.95	4-4	
4023.739	C	8	3.87	6.94	3-3	
3716.531	C	10w	3.88	7.20	5-4	a^5F-r^5D^o †
3714.39	B	4w	3.87	7.20	4-4	(269)
3712.50	B	1w	3.87	7.20	3-4	
4481.44	B	18	3.96	6.72	6-7	a^1I-z^3K^o † (270)
4268.788	C	10	3.96	6.85	6-6	a^1I-z^1I^o (271)
4204.471	C	12	3.96	6.90	6-5	a^1I-u^3H^o (272)
4192.103	C	15	3.98	6.91	6-5	a^1I-z^1H^o (273)
3527.08	B	3N	3.96	7.46	6-6	a^1I-y^1I^o (274)
*4542.621	C	35	4.09	6.80	4-4	b^3F-v^3F^o
4495.275	C	12	4.09	6.83	4-3	(275)
4531.82	B	2	4.08	6.80	3-4	
4524.841	C	15	4.09	6.82	4-4	b^3F-w^3F^o †
*4535.721	C	60	4.08	6.80	3-3	(276)
4553.949	C	18	4.08	8.79	2-2	
*4521.141	C	25	4.08	6.81	2-2	b^3F-v^3D^o
4561.54	B	10w	4.08	6.78	2-1	(277)
4169.838	C	1	4.09	7.05	4-5	b^3F-u^3G^o †
4170.202	C	15	4.08	7.04	3-4	(278)
4174.941	C	8	4.08	7.03	2-3	
4065.716	C	12	4.09	7.12	4-5	b^3F-t^3G^o
4076.061	C	10	4.08	7.11	3-4	(279)
4077.677	C	10	4.08	7.11	2-3	
3990.16	B	8	4.09	7.18	4-4	b^3F-u^3F^o †
3976.30	B	5	4.08	7.19	3-3	(280)
3979.324	C	7	4.08	7.18	2-2	
3564.30	B	7	4.09	7.55	4-5	b^3F-s^3G^o
3562.48	B	4	4.08	7.55	3-4	(281)
*3565.55	B	2	4.08	7.54	2-3	
3569.14	B	5	4.09	7.55	4-4	
6661.076	C	50	4.17	6.03	4-4	z^5D^o-f^5D
6669.257	C	40	4.16	6.01	3-3	(282)
6657.54	B	20w	4.14	5.99	2-2	
6734.16	B	30	4.17	6.01	4-3	
6715.38	B	35	4.16	5.99	3-2	
6880.19	B	25w	4.14	5.99	2-1	
6597.556	C	40	4.16	6.03	3-4	
6612.17	B	40	4.14	6.01	2-3	
4796.169	C	40w	4.17	6.75	4-5	z^5D^o-e^5F †
4783.06	B	15w	4.16	6.74	3-4	(283)
4775.53	B	10w	4.14	6.73	2-3	
*4769.80	B	4w	4.13	6.71	1-2	
			(4.12	6.70	0-1	
4816.41	B	10w	4.17	6.74	4-4	
4805.24	B	15w	4.16	6.73	3-3	
4796.84	B	12w	4.14	6.71	2-2	
3566.10	B	25n	4.17	7.64	4-3	z^5D^o-f^5P
3568.36	B	3w	4.16	7.62	3-2	(284)
5285.38	B	7	4.17	6.50	6-7	b^1I-y^3I^o
5309.47	B	8	4.17	6.49	6-5	(285)
4595.590	C	45	4.17	6.85	6-6	b^1I-z^1I^o (286)
4514.373	C	20	4.17	6.90	6-6	b^1I-u^3H^o
*4521.141	C	25	4.17	6.90	6-5	(287)
4506.853	C	30	4.17	6.91	6-5	b^1I-z^1H^o (288)
3747.264	C	7	4.17	7.46	6-6	b^1I-y^1I^o (289)
4757.326	C	15	4.22	6.82	2-3	z^3P^o-e^3D †
4743.112	C	12w	4.18	6.79	1-2	(290)
*4751.04	B	5w	4.17	6.77	0-1	
8167.94	A	4	4.19	5.70	3-3	c^3D-y^3D^o (291)
4699.589	C	25	4.19	6.82	3-4	c^3D-w^3F^o †
4723.18	B	8	4.19	6.80	2-3	(292)
4741.089	D	12	4.19	6.79	1-2	
4488.051	C	30	4.19	6.94	3-3	c^3D-y^5G^o (293)
4232.232	C	15	4.19	7.11	2-3	c^3D-t^3G^o (294)
4000.59	B	4	4.19	7.37	3-2	c^3D-t^3P^o (295)
8707.95	A	12	4.37	5.79	4-3	c^5D-u^5P^o †
8718.70	A	8	4.38	5.80	3-2	(296)
8732.17	A	3	4.39	5.80	2-1	
8788.96	A	4	4.38	5.79	3-3	
8773.56	A	5	4.39	5.80	2-2	
8297.58	A	3	4.39	5.88	2-3	c^5D-x^5H^o (297)
8183.22	A	35	4.37	5.88	4-5	c^5D-v^5F^o
8235.89	A	30	4.38	5.88	3-4	(298)
8287.38	A	25	4.39	5.88	2-3	
8322.06	A	20	4.40	5.88	1-2	
8338.83	A	5	4.40	5.88	0-1	
*8166.66	A	7	4.37	5.88	4-4	
8238.29	A	12	4.38	5.88	3-3	
8290.62	A	10	4.39	5.88	2-2	
8323.44	A	5	4.40	5.88	1-1	
8018.04	A	3	4.37	5.91	4-4	c^5D-v^5D^o †
8119.13	A	3	4.38	5.90	3-3	(299)
8185.69	A	5	4.39	5.90	2-2	
8225.67	A	3	4.40	5.90	1-1	
8084.98	A	10	4.38	5.91	3-4	
*8166.68	A	7	4.39	5.90	2-3	
8218.28	A	5	4.40	5.90	1-2	
7942.03	A	25	4.37	5.92	4-5	c^5D-u^5F^o †
7989.36	A	12	4.38	5.93	3-4	(300)
8061.27	A	10	4.39	5.92	2-3	
8128.28	A	8	4.40	5.92	1-2	
8169.80	A	5	4.40	5.91	0-1	
6729.72	B	40	4.37	6.20	4-5	c^5D-t^5F^o (301)
*5373.715	C	30	4.44	6.73	6-5	b^3H-r^5F^o
*5391.350	C	35	4.43	6.72	5-4	(302)
4592.54	B	15	4.44	7.12	6-5	b^3H-t^3G^o †
4606.375	C	15	4.43	7.11	5-4	(303)
4609.894	C	8	4.43	7.11	4-3	
4376.798	C	25	4.44	7.26	6-6	b^3H-t^3H^o †
m4371.28	P	Cr	4.43	7.25	5-5	(304)
4373.656	C	15	4.43	7.25	4-4	
4161.415	C	15	4.44	7.40	6-7	b^3H-w^3I^o
4165.519	C	15	4.43	7.39	5-6	(305)
4142.193	C	7	4.43	7.41	4-5	
4174.15	B	3	4.44	7.39	6-6	
4043.696	C	7	4.44	7.49	6-7	b^3H-v^3I^o †
4056.793	C	5	4.43	7.47	5-6	(306)
4071.000	C	5	4.43	7.48	4-5	
3958.08	B	5	4.44	7.55	6-6	b^3H-s^3H^o
3979.22	B	6	4.43	7.53	5-5†	(307)
3998.85	B	4	4.43	7.51	4-4	
3562.29	B	5	4.44	7.90	6-6	b^3H-q^3H^o
3564.953	C	5	4.43	7.89	5-5	(308)
*3574.039	C	15	4.43	7.88	4-4	
5283.750	D	40	4.47	6.82	4-3	z^3F^o-e^3D
5278.262	C	40	4.45	6.79	3-2	(309)
5287.62	B	10w	4.43	6.77	2-1	
4503.05	B	12	4.68	7.42	2-1	e^5S-x^3G^o (310)
4656.837	D	10	4.76	7.41	5-5	a^1H-w^3I^o (311)
4564.168	C	40	4.76	7.46	5-6	a^1H-y^1I^o (312)
3926.649	C	10	4.76	7.90	5-6	a^1H-q^3H^o (313)
6135.759	C	25	4.80	6.82	3-3	z^3D^o-e^3D (314)
*6762.41	C	40	5.26	7.08	6-6	z^5G^o-e^5G †
6757.78	B	25	5.26	7.08	5-5	(315)
6751.28	B	40	5.25	7.08	4-4	
6744.66	B	15	5.25	7.08	3-3	
6738.81	B	18	5.25	7.08	2-2	
7908.30	A	20	5.60	7.16	6-5	z^3H^o-e^3G
7910.50	A	18	5.60	7.16	5-4	(316)
7917.85	A	18	5.60	7.16	4-3	

Strongest Unclassified Lines of Cr I

7771.74	A	15	
6789.17	C	18	
5854.37	B	75	
5796.757	C	40	
5753.692	C	25	V
5712.635	C	10	V
5681.198	C	60	V
5385.28	B	20v	
5370.356	C	40	
5078.711	C	40	
4884.949	C	25	IIIA
4752.084	C	50	IV
4614.73	B	10	
4611.968	C	15	
4594.403	C	8	
4586.99	B	8	
4489.471	C	5w	IV
4403.498	C	40	IV
4323.523	C	30	IV
4301.178	C	25	IV
4261.615	C	12	IV
4206.899	C	10	V
4200.103	C	12	III
4128.925	C	8	III
3999.679	C	7	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr I continued						
3911.95	B	(10n)*	(III	III		
3830.032	C	50w	V			
3584.366	D	30w	V			
3574.38	B	3N	III			
3559.21	C	2N	IV?			
3558.60	B	7w	III			
3552.953	C	4w	IV			
3550.635	C	10w	V			
3547.98	B	3n	III			
3532.888	C	5	V			
3525.44	B	4N	IV			
3508.81	B	5n	III			
3508.09	B	5	III			
3474.379	C	12	III			
3411.01	B	8n	IV			
3409.38	B	7n	IV			
3408.01	B	4n	IV			
3407.22	B	5n	IV			
3376.18	E	3n	V			
3349.072	C	20w	III			
3346.09	E	5w	III			
3334.690	C	20w	III			
3333.605	C	15w	III			
3287.70	B	2N	V			
3254.95	B	2N	V			
*3180.701§	C	↑	III			
3098.531	C	5w	III			
3095.859	C	7w	III			
2983.73	B	3w	III			
2957.28	B	3w	V			

Cr II I P 18.8	Anal B		List A		April 1941	
3843.22	A	10	2.47	5.86	3½-4½	$a^4D-z^6F^o$ (1)
3644.70	A	10	2.44	5.83	2½-3½	
3647.40	A	8	2.42	5.81	1½-2½	
3851.68	A	12	2.41	5.79	½-1½	
3675.00	P		2.47	5.83	3½-3½	
3669.69	P		2.44	5.81	2½-2½	
3665.48	P		2.42	5.79	1½-1½	
3662.62	P		2.41	5.78	½- ½	
3700.42	P		2.47	5.81	3½-2½	
3688.01	P		2.44	5.79	2½-1½	
3676.50	P		2.42	5.78	1½- ½	
3494.52	A	4	2.47	6.00	3½-3½	$a^4D-z^6P^o$ (2)
3484.15	A	20	2.44	5.99	2½-2½	
*3475.13 §	A	20	2.42	5.97	1½-1½	
3511.84	A	35	2.47	5.99	3½-2½	
3495.37	A	25	2.44	5.97	2½-1½	
3487.09	P		2.44	8.00	2½-3½	
3484.02	A	4	2.42	5.99	1½-2½	
3482.73	A	8	2.41	5.97	½-1½	
3408.765	B	150	2.47	8.09	3½-2½	$a^4D-z^4P^o$ (3)
3422.739	B	125	2.44	8.05	2½-1½	
3433.30	A	75	2.42	8.02	1½- ½	
3382.883	B	80	2.44	8.09	2½-2½	
3403.322	B	100	2.42	8.05	1½-1½	
3421.20	A	75	2.41	8.02	½- ½	
3363.71	A	12	2.42	8.09	1½-2½	
3391.434	B	35	2.41	6.05	½-1½	
3353.12	A	20	2.47	8.15	3½-4½	$a^4D-z^6D^o$ (4)
*3349.34 §	A	8	2.44	8.13	2½-3½	
3334.060	B	25	2.42	8.14	1½-2½	
3328.351	B	20	2.41	6.12	½-1½	
3374.95	A	3	2.47	6.13	3½-3½?	
3343.51	A	50	2.44	6.14	2½-2½	
3339.804	B	50	2.42	8.13	1½-1½	
3338.330	B	40	2.41	8.11	½- ½	
3368.054	B	150	2.47	8.14	3½-2½	
3358.501	B	75	2.44	8.12	2½-1½	
3347.837	B	40	2.42	8.11	1½- ½	
3132.058	B	125	2.47	8.41	3½-4½	$a^4D-z^4F^o$ (5)
3134.978	B	100	2.44	8.39	2½-3½	
3120.371	B	75	2.42	8.38	1½-2½	
3118.653	B	60	2.41	8.37	½-1½	
3147.237	B	50	2.47	8.39	3½-3½	
3136.680	B	40	2.44	8.38	2½-2½	
3138.899	B	40	2.42	8.37	1½-1½	
3159.10	A	5	2.47	8.38	3½-2½	
3145.10	A	10	2.44	8.37	2½-1½	
3670.18	P		2.53	5.89	5½-5½	$a^4G-z^8F^o$ (8)
3710.22	P		2.53	5.88	4½-4½	
3742.99	P		2.53	5.83	3½-3½	
3768.57	P		2.53	5.81	2½-2½	
3709.25	P		2.53	5.88	5½-4½	
3743.20	P		2.53	5.83	4½-3½	
3769.37	P		2.53	5.81	3½-2½	
3787.89	P		2.53	5.79	2½-1½	
3671.12	P		2.53	5.89	4½-5½	
3710.01	P		2.53	5.86	3½-4½	
3743.20	P		2.53	5.83	2½-3½	
3558.130	B	(1)	2.53	8.00	4½-3½	$a^4G-z^6P^o$ (7)
3408.96	P		2.53	8.15	5½-4½	$a^4G-z^6D^o$ (8)
3432.32	A	2	2.53	6.13	4½-3½	
3425.09	P		2.53	6.14	3½-2½	
3441.14	P		2.53	6.12	2½-1½	
3409.79	P		2.53	6.15	4½-4½	
3432.12	P		2.53	8.13	3½-3½	
3424.43	P		2.53	8.14	2½-2½	
3409.80	P		2.53	8.15	3½-4½	
3431.45	P		2.53	6.13	2½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
*3180.73 §	A	75	2.53	6.41	5½-4½	$a^4G-z^4F^o$ (9)
3197.12	A	75	2.53	6.39	4½-3½	
3209.21	A	50	2.53	6.38	3½-2½	
3217.44	A	50	2.53	6.37	2½-1½	
3181.428	B	20	2.53	6.41	4½-4½	
3196.96	A	20	2.53	6.39	3½-3½	
3208.62	A	20	2.53	6.38	2½-2½	
*3196.40	A	3	2.53	6.39	2½-3½	
3935.18	P		2.69	5.83	2½-3½	$a^4P-z^6F^o$ (10)
3964.64	P		2.69	5.81	1½-2½	
3985.96	P		2.69	5.79	½-1½	
3964.35	P		2.69	5.81	2½-2½	
3986.03	P		2.69	5.79	1½-1½	
3999.00	P		2.69	5.78	½- ½	
3985.74	P		2.69	5.79	2½-1½	
3999.07	P		2.69	5.78	1½- ½	
3748.68	A	7	2.69	5.99	2½-3½	$a^4P-z^6P^o$ (11)
*3761.90	A	8	2.69	5.97	1½-1½	
3761.69	A	7	2.69	5.97	2½-1½	
*3761.90	A	8	2.89	5.97	½-1½	
3631.49	A	50	2.69	6.09	2½-3½	$a^4P-z^4P^o$ (12)
3677.93	A	30	2.69	6.05	1½-1½	
3712.97	A	35	2.89	6.02	½- ½	
3877.69	A	40	2.69	8.05	2½-1½	
3713.04	A	15	2.69	6.02	1½- ½	
3631.72	A	40	2.69	6.09	1½-2½	
3877.88	A	50	2.69	8.05	½-1½	
3593.02	P		2.89	6.13	2½-3½	$a^4P-z^6D^o$ (13)
3585.54	A	40	2.69	6.14	1½-2½	
3603.80	A	40	2.69	6.13	½-1½	
3585.31	A	60	2.69	6.14	2½-2½	
3803.88	A	20	2.69	6.13	1½-1½	
3613.21	A	20	2.69	6.11	½- ½	
3603.61	A	20	2.89	6.13	2½-1½	
3813.26	A	15	2.69	8.11	1½- ½	
3336.16	A	2	2.69	6.39	2½-3½	$a^4P-z^4F^o$ (14)
3349.68	P		2.69	8.38	1½-2½	
3032.927	B	30	2.69	6.76	2½-3½	$a^4P-z^4D^o$ (15)
3047.76	A	25	2.69	6.74	1½-2½	
*3059.521	B	25	2.89	6.73	½-1½	
3047.63	A	20	2.69	6.74	2½-2½	
*3059.521	B	25	2.69	6.73	1½-1½	
3067.18	A	20	2.69	6.72	½- ½	
3059.41	A	10	2.69	8.73	2½-1½	
m3067.23	P	Cr↓	2.69	8.72	1½- ½	
4456.84	P		3.09	5.86	3½-4½	$b^4D-z^6F^o$ (16)
4507.19	P		3.09	5.83	2½-3½	
4544.70	P		3.09	5.81	1½-2½	
4571.24	P		3.09	5.79	½-1½	
4504.52	P		3.09	5.83	3½-3½	
4545.49	P		3.09	5.81	2½-2½	
4572.83	P		3.09	5.79	1½-1½	
4588.40	P		3.09	5.78	½- ½	
4542.77	P		3.09	5.81	3½-2½	
4573.63	P		3.09	5.79	2½-1½	
4590.00	P		3.09	5.78	1½- ½	
4236.33	P		3.09	6.00	3½-3½	$b^4D-z^8P^o$ (17)
4284.19	P		3.09	5.99	2½-2½	
4280.33	P		3.09	5.97	1½-1½	
4281.80	P		3.09	5.99	3½-2½	
4281.03	P		3.09	5.97	2½-1½	
4238.69	P		3.09	6.00	2½-3½	
4283.49	P		3.09	5.99	1½-2½	
4278.94	P		3.09	5.97	½-1½	
*4111.01	A	18	3.09	8.09	3½-2½	$b^4D-z^4P^o$ (18)
4172.60	A	2	3.09	8.05	2½-1½	
4217.07	A	1	3.09	8.02	1½- ½	
4113.24	A	5	3.09	8.09	2½-2½	
4171.92	A	3	3.09	8.05	1½-1½	
4215.77	A	2	3.09	8.02	½- ½	
4112.59	A	1	3.09	8.09	1½-2½	
4170.58	P		3.09	6.05	½-1½	
4030.28	P		3.09	8.15	3½-4½	$b^4D-z^6D^o$ (19)
4083.94	P		3.09	6.13	2½-3½	
4053.45	A	1	3.09	8.14	1½-2½	
4075.63	P		3.09	6.12	½-1½	
4081.77	P		3.09	8.13	3½-3½	
4054.11	A	8	3.09	6.14	2½-2½	
4078.87	A	3	3.09	6.12	1½-1½	
4087.83	A	2	3.09	8.11	½- ½	
4051.97	A	12	3.09	6.14	3½-2½	
4077.50	A	4	3.09	8.12	2½-1½	
4088.90	A	1	3.09	6.11	1½- ½	
3715.19	A	20	3.09	8.41	3½-4½	$b^4D-z^4F^o$ (20)
3738.38	A	25	3.09	8.39	2½-3½	
3754.59	A	20	3.09	8.38	1½-2½	
3765.82	A	8	3.09	8.37	½-1½	
3736.56	A	1	3.09	8.39	3½-3½	
3755.13	A	2	3.09	8.38	2½-2½	
3766.65	A	4	3.09	8.37	1½-1½	
3753.28	P		3.09	8.38	3½-2½	
3787.18	P		3.09	8.37	2½-1½	
3360.295	B	100	3.09	6.78	3½-3½	$b^4D-z^4D^o$ (21)
*3379.825§	B	60	3.09	8.74	2½-2½	
3393.86	A	30	3.09	8.73	1½-1½	
3402.43	A	25	3.09	6.72	½- ½	
3378.337	B	25	3.09	6.74	3½-2½	
3394.32	A	35	3.09	6.73	2½-1½	
m3403.29	P	Cr↓	3.09	6.72	1½- ½	
3381.770	B	30	3.09	8.78	2½-3½	
3379.371	B	30	3.09	8.74	1½-2½	
3393.00	A	35	3.09	6.73	½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
5626.60	P		3.81	6.00	2½-3½	$b^4P-z^6P^o$ (22)
5497.86	P		3.74	5.99	1½-2½	
*5419.36	A	1	3.70	5.97	½-1½	
5671.62	P		3.81	5.99	2½-2½	
5525.90	P		3.74	5.97	1½-1½	
5701.46	P		3.81	5.97	2½-1½	
5407.62	A	10	3.81	6.09	2½-2½	$b^4P-z^4P^o$ (23)
5346.54	A	5	3.74	6.05	1½-1½	
5318.41	A	4	3.70	6.02	½- ½	
5510.68	A	7	3.81	6.05	2½-1½	
5420.90	A	10	3.74	6.02	1½- ½	
5249.40	A	10	3.74	6.09	1½-2½	
5246.75	A	15	3.70	6.05	½-1½	
5322.78	P		3.81	6.13	2½-3½	$b^4P-z^6D^o$ (24)
5153.49	A	15	3.74	6.14	1½-2½	
5097.29	A	7	3.70	6.12	½-1½	
5305.85	A	25	3.81	6.14	2½-2½	
5191.46	A	2	3.74	6.12	1½-1½	
5116.08	A	2	3.70	6.11	½- ½	
5346.12	P		3.81	6.12	2½-1½	
5210.87	A	7	3.74	6.11	1½- ½	
4777.78	P		3.81	6.39	2½-3½	$b^4P-z^4F^o$ (25)
4679.87	P		3.74	6.38	1½-2½	
4621.41	P		3.70	6.37	½-1½	
4805.18	P		3.81	6.38	2½-2½	
4698.64	P		3.74	6.37	1½-1½	
4824.97	P		3.81	6.37	2½-1½	
4179.43	A	12	3.81	6.76	2½-3½	$b^4P-z^4D^o$ (26)
*4111.01	A	18	3.74	6.74	1½-2½	
4072.56	A	4	3.70	6.73	½-1½	
4207.35	A	4	3.81	6.74	2½-2½	
4132.41	A	7	3.74	6.73	1½-1½	
4086.14	A	8	3.70	6.72	½- ½	
4229.81	A	1	3.81	6.73	2½-1½	
2978.718	B	35	3.81	7.96	2½-2½	$b^4P-y^4D^o$ † (27)
*2961.732	B	50	3.74	7.91	1½-1½	
2953.358	B	35	3.70	7.88	½- ½	
3011.42	A	7	3.81	7.91	2½-1½	
2984.69	A	10	3.74	7.88	1½- ½	
2971.906	B	75	3.75	7.90	6½-6½	$a^4H-z^4H^o$ (28)
2979.741	B	80	3.74	7.88	5½-5½	
2985.335	B	75	3.73	7.86	4½-4½	
2989.194	B	70	3.72	7.85	3½-3½	
2988.056	C	12	3.75	7.88	6½-5½	
2992.40	A	10	3.74	7.86	5½-4½?	
2994.737	B	20	3.73	7.85	4½-3½	
2972.64	A	10	3.73	7.88	4½-5½	
5369.25	P		3.85	6.15	4½-4½	$a^4F-z^6D^o$ (29)
5410.39	P		3.85	6.13	3½-3½	
5378.07	P		3.84	6.14	2½-2½	
5409.38	P		3.84	6.12	1½-1½	
5425.29	P		3.85	6.13	4½-3½	
5392.95	P		3.85	6.14	3½-2½	
*5419.36	A	1	3.84	6.12	2½-1½	
5430.41	P		3.84	6.11	1½- ½	
5354.66	P		3.85	6.15	3½-4½	
5395.41	P		3.84	6.13	2½-3½	
5388.10	P		3.84	6.14	1½-2½	
4824.13	A	75	3.85	6.41	4½-4½	$a^4F-z^4F^o$ (30)
4848.24	A	60	3.85	6.39	3½-3½	
4864.32	A	50	3.84	6.38	2½-2½	
4878.41	A	50	3.84	6.37	1½-1½	
4860.20	A	20	3.85	6.39	4½-3½	
4876.48	P		3.85	6.38	3½-2½	
4884.57	A	10	3.84	6.37	2½-1½	
4813.35	A	25	3.85	6.41	3½-4½	
4836.22	A	25	3.84	6.39	2½-3½	
4856.19	A	20	3.84	6.38	1½-2½	
4242.38	A	30	3.85	6.76	4½-3½	$a^4F-z^4D^o$ (31)
4261.92	A	20	3.85	6.74	3½-2½	
4275.57	A	30	3.84	6.73	2½-1½	
4284.21	A	20	3.84	6.72	1½- ½	
4233.25	A	10	3.85	6.76	3½-3½	
4252.82	A	10	3.84	6.74	2½-2½	
4269.28	A	10	3.84	6.73	1½-1½	
4234.09	P		3.84	6.76	2½-3½	
4246.41	A	2	3.84	6.74	1½-2½	
3083.84	A	7	3.85	7.88	4½-5½	$a^4F-z^4H^o$ (32)
*3072.47	A	8	3.85	7.86	3½-4½	
2968.051	B	40	3.85	8.01	4½-3½	$a^4F-y^4D^o$ (33)
3003.924	B	35	3.85	7.96	3½-2½	
3034.54	A	15	3.84	7.91	2½-1½	
3055.44	A	12	3.84	7.88	1½- ½	
2999.30	A	8	3.84	7.96	2½-2½	
5553.81	P		3.87	6.09	2½-2½	$a^2D-z^4P^o$ (34)
5721.02	P		3.89	6.05	1½-1½	
5662.58	P		3.87	6.05	2½-1½	
5806.31	P		3.89	6.02	1½- ½	
5610.01	P		3.89	6.09	1½-2½	
5464.36	P		3.87	6.13	2½-3½	$a^2D-z^6D^o$ (35)
5500.61	P		3.89	6.14	1½-2½	
5446.57	P		3.87	6.14	2½-2½	
5543.86	P		3.89	6.12	1½-1½	
5488.97	P		3.87	6.12	2½-1½	
5566.08	P		3.89	6.11	1½- ½	
4891.55	P		3.87	6.39	2½-3½	$a^2D-z^4F^o$ (36)
4964.34	P		3.89	6.38	1½-2½	
4920.38	P		3.87	6.38	2½-2½	
4985.46	P		3.89	6.37	1½-1½	
4941.03	P		3.87	6.37	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
4266.23	P		3.87	6.76	2½-3½	$a^2D-z^4D^o$
4338.91	P		3.89	6.74	1½-2½	(37)
4295.37	P		3.87	6.74	2½-2½	
4352.68	P		3.89	6.73	1½-1½	
4318.77	P		3.87	6.73	2½-1½	
4368.20	P		3.89	6.72	1½- 2	
5104.03	P		3.99	6.41	3½-4½	$a^2F-z^4F^o$
m5210.88	P	Cr+	4.02	6.39	2½-3½	(38)
5144.47	P		3.99	6.39	3½-3½	
5243.50	P		4.02	6.38	2½-2½	
5176.26	P		3.99	6.38	3½-2½	
5267.10	A	4	4.02	6.37	2½-1½	
4539.62	A	2	4.02	6.74	2½-2½	$a^2F-z^4D^o$
4565.78	A	10	4.02	6.73	2½-1½	(39)
3177.90	A	1	4.02	7.91	2½-1½	$a^2F-y^4D^o$ (40)
3026.85	A	20	3.99	8.07	3½-4½	$a^2F-z^4G^o$
3061.59	A	8	4.02	8.06	2½-3½	(41)
3038.52	A	3	3.99	8.06	3½-3½	
3071.03	A	2	4.02	8.04	2½-2½	
2999.96	A	25	3.99	8.11	3½-4½	$a^2F-z^2G^o$
3034.99	A	10	4.02	8.09	2½-3½	(42)
3012.34	A	2	3.99	8.09	3½-3½	
5237.34	A	75	4.06	6.41	4½-4½	$b^4F-z^4F^o$
5274.99	A	20	4.05	6.39	3½-3½	(43)
5313.59	A	25	4.06	6.38	2½-2½	
5334.88	A	40	4.05	6.37	1½-1½	
5279.92	A	15	4.06	6.39	4½-3½	
5308.44	A	20	4.05	6.38	3½-2½	
5337.79	A	12	4.06	6.37	2½-1½	
5232.50	A	15	4.05	6.41	3½-4½	
5280.08	A	10	4.06	6.39	2½-3½	
5310.70	A	12	4.05	6.38	1½-2½	
4558.659	B	100	4.06	6.78	4½-3½	$b^4F-z^4D^o$
4588.217	B	75	4.05	6.74	3½-2½	(44)
4618.83	A	35	4.06	6.73	2½-1½	
4634.11	A	25	4.05	6.72	1½- ½	
4555.02	A	20	4.05	6.76	3½-3½	
4592.09	A	20	4.06	6.74	2½-2½	
4616.64	A	18	4.05	6.73	1½-1½	
4558.83	P		4.06	6.76	2½-3½	
4589.89	A	3	4.05	6.74	1½-2½	
3225.44	A	8	4.06	7.88	4½-5½	$b^4F-z^4H^o$ (45)
3117.28	A	15	4.06	8.01	4½-3½	$b^4F-y^4D^o$
3162.46	A	10	4.05	7.96	3½-2½	(46)
3203.53	A	15	4.06	7.91	2½-1½	
3229.38	A	8	4.05	7.88	1½- ½?	
3115.65	A	20	4.05	8.01	3½-3½	
3164.28	A	4	4.06	7.96	2½-2½	
3042.79	A	25	4.06	8.11	4½-5½	$b^4F-z^4G^o$
3071.58	A	7	4.05	8.07	3½-4½	(47)
3085.36	A	10	4.06	8.06	2½-3½	
3093.97	A	15	4.05	8.04	1½-2½	
3073.25	A	15	4.06	8.07	4½-4½	
3083.62	A	10	4.05	8.06	3½-3½	
*3094.94	A	10	4.06	8.04	2½-2½	
3045.53	A	4	4.06	8.11	4½-4½	$b^4F-z^2G^o$
3056.68	A	8w	4.05	8.09	3½-3½	(48)
3043.90	A	18	4.05	8.11	3½-4½	
3058.38	A	12	4.06	8.09	2½-3½	
2958.20	A	1	4.06	8.23	2½-1½	$b^4F-z^2D^o$ (49)
5478.35	A	15	4.16	6.41	5½-4½	$b^4G-z^4F^o$
5502.05	A	12	4.15	6.39	4½-3½	(50)
5508.60	A	8	4.14	6.38	3½-2½	
5503.18	A	8	4.13	6.37	2½-1½	
5455.80	A	1	4.15	6.41	4½-4½	
5472.63	A	3	4.14	6.39	3½-3½	
5477.45	P		4.13	6.38	2½-2½	
3295.427	B	50	4.16	7.90	5½-6½	$b^4G-z^4H^o$
3307.044	C	50	4.15	7.88	4½-5½	(51)
3311.929	B	40	4.14	7.86	3½-4½	
3312.18	A	40	4.13	7.85	2½-3½	
3315.29	A	12	4.16	7.88	5½-5½	
3322.69	A	12	4.15	7.86	4½-4½	
3323.53	A	8	4.14	7.85	3½-3½	
3193.41	A	2	4.15	8.01	4½-3½	$b^4G-y^4D^o$ (52)
*3131.54	A	5	4.16	8.10	5½-6½	$b^4G-z^4I^o$
*3143.68 §	A	7	4.15	8.08	4½-5½	(53)
3154.04	A	5d	4.14	8.05	3½-4½	
3122.596	B	30	4.16	8.11	5½-5½	$b^4G-z^4G^o$
m3147.19	P	Cr+	4.15	8.07	4½-4½	(54)
3150.11	A	20	4.14	8.08	3½-3½	
3149.83	A	20	4.13	8.04	2½-2½	
3154.66	P		4.16	8.07	5½-4½	
3159.86	A	5	4.15	8.06	4½-3½	
3160.11	A	3	4.14	8.04	3½-2½	
3115.28	A	12	4.15	8.11	4½-5½	
3137.55	A	8	4.14	8.07	3½-4½	
3139.91	A	8	4.13	8.06	2½-3½	
3125.46	A	7	4.18	8.11	5½-4½	$b^4G-z^2G^o$
*3131.54	A	5	4.15	8.09	4½-3½	(55)
3118.14	A	10	4.15	8.11	4½-4½	
3121.97	A	7	4.14	8.09	3½-3½	
3108.66	A	10	4.14	8.11	3½-4½	
3111.95	A	15	4.13	8.09	2½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
2985.02	A	7	4.14	8.27	3½-3½	$b^4G-z^2P^o$ (56)
2970.66	A	2	4.13	8.28	2½-1½	$b^4G-z^2P^o$ (57)
2968.67	A	15	4.18	8.32	5½-5½	$b^4G-y^4G^o$
2963.46	A	20	4.15	8.31	4½-4½	(58)
2956.60	A	10	4.14	8.31	3½-3½	
*2965.19	A	2	4.15	8.31	4½-3½	
2955.71	A	2	4.14	8.31	3½-2½	
*2961.732	B	50	4.18	8.33	5½-4½	$b^4G-y^4F^o$ †
2959.97	A	18	4.15	8.32	4½-3½	(59)
2951.95	A	10	4.14	8.32	3½-2½	
2955.12	A	10	4.15	8.33	4½-4½?	
2951.40	A	10	4.14	8.32	3½-3½	
*3421.62	A	4	(4.30 4.38	7.90 7.88	5½-6½ 4½-5½	$a^2H-z^4H^o$ (60)
3460.03	A	1	4.30	7.86	5½-4½	
3450.84	A	3	4.28	7.85	4½-3½	
3270.14	A	40	4.30	8.07	5½-4½	$a^2H-z^4G^o$
3284.28	A	35	4.28	8.06	4½-3½	(61)
3250.79	A	10	4.28	8.07	4½-4½	
3245.31	A	5	4.30	8.10	5½-6½	$a^2H-z^4I^o$
3247.01	A	4	4.28	8.08	4½-5½	(62)
3268.46	A	10	4.28	8.05	4½-4½	
3288.04	A	15	4.30	8.05	5½-4½	
3238.77	A	50	4.30	8.11	5½-4½	$a^2H-z^2G^o$
3234.06	A	50	4.28	8.09	4½-3½	(63)
3219.79	A	10	4.28	8.11	4½-4½	
3053.65	A	10	4.28	8.32	4½-5½	$a^2H-y^4G^o$ (64)
3050.137	B	100	4.30	8.34	5½-6½	$a^2H-z^2I^o$
3040.92	A	70	4.28	8.33	4½-5½	(65)
3057.88	A	12	4.30	8.33	5½-5½	
2953.706	B	45	4.28	8.45	4½-4½	$a^2H-z^2H^o$ †
2989.67	A	15	4.30	8.45	5½-4½	(66)
3400.08	A	2	4.28	7.91	½-1½	$a^2P-y^4D^o$
3482.58	A	12	4.38	7.91	1½-1½	(87)
3430.42	A	3	4.28	7.88	½- ½	
3389.05	A	18	4.36	8.03	1½- ½	$a^2P-z^2S^o$
3291.75	A	40	4.28	8.03	½- ½	(68)
3188.75	A	18	4.36	8.24	1½-2½	$a^2P-y^4P^o$
3154.10	A	2	4.28	8.19	½-1½	(69)
3163.93	A	10	4.28	8.18	½- ½	
3158.03	A	20	4.36	8.27	1½-2½	$a^2P-z^2D^o$
3125.02	A	15	4.28	8.23	½-1½?	(70)
3194.83	A	10	4.36	8.23	1½-1½	
3152.21	A	40	4.36	8.28	1½-1½	$a^2P-z^2P^o$
3103.48	A	30	4.28	8.26	½- ½	(71)
3172.08	A	40	4.36	8.26	1½- ½	
3084.46	A	15	4.28	8.28	½-1½	
3121.05	A	8	4.36	8.32	1½-2½	$a^2P-y^4F^o$
3121.84	A	10	4.36	8.32	1½-1½	(72)
3074.91	A	3	4.38	8.38	1½-2½	$a^2P-x^4D^o$
3074.67	A	3	4.36	8.38	1½-1½	(73)
3034.05	A	5	4.38	8.43	1½-1½	$a^2P-z^4S^o$ (74)
3008.67	A	3	4.38	8.47	1½-2½	$a^2P-z^2F^o$ (75)
3557.85	P		4.40	7.88	3½-4½	$b^2F-z^4H^o$
3566.37	A	1	4.39	7.85	2½-3½	(76)
*3466.25	A	2	4.40	7.96	3½-2½	$b^2F-y^4D^o$
3508.67	P		4.39	7.91	2½-1½	(77)
3376.27	A	10	4.40	8.05	3½-4½	$b^2F-z^4I^o$ (78)
3357.40	A	40	4.40	8.07	3½-4½	$b^2F-z^4G^o$
3387.42	A	12	4.39	8.06	2½-3½	(79)
3324.346	B	50	4.40	8.11	3½-4½	$b^2F-z^2G^o$
3335.28	A	40	4.39	8.09	2½-3½	(80)
3212.53	A	20	4.40	8.24	3½-2½	$b^2F-y^4P^o$
3247.33	A	8	4.39	8.19	2½-1½	(81)
3183.325	B	40	4.40	8.27	3½-2½	$b^2F-z^2D^o$
3218.55	A	20	4.39	8.23	2½-1½	(82)
3179.45	A	8	4.39	8.27	2½-2½	
3173.58	A	15	4.39	8.28	2½-1½?	$b^2F-z^2P^o$ (83)
3149.12	A	4	4.40	8.31	3½-4½	$b^2F-y^4G^o$ (84)
3145.77	A	15	4.40	8.32	3½-2½	$b^2F-y^4P^o$
3142.74	A	10	4.39	8.32	2½-1½	(85)
3098.16	A	18	4.40	8.38	3½-3½	$b^2F-x^4D^o$
3095.22	A	3	4.39	8.38	2½-2½	(88)
3098.88	A	3	4.40	8.38	3½-2½	
*3094.94	A	10	4.39	8.38	2½-1½	
3015.510	B	50	4.40	8.49	3½-3½	$b^2F-z^2F^o$
3028.125	B	40	4.39	8.47	2½-2½	(87)
3031.83	A	1	4.40	8.47	3½-2½	
3012.01	A	1	4.39	8.49	2½-3½	
3004.47	A	3	4.39	8.50	2½-3½	$b^2F-y^4H^o$ (88)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
3529.73	A	2	4.41	7.90	5½-6½	$b^2H-z^4H^o$
3540.28	P		4.40	7.88	4½-5½	(89)
3552.50	P		4.41	7.88	5½-5½	
3558.22	P		4.40	7.88	4½-4½	
3570.57	P		4.41	7.86	5½-4½	
3571.84	P		4.40	7.85	4½-3½	
3387.73	A	5	4.41	8.05	5½-4½	$b^2H-z^4I^o$ (90)
3357.72	A	0	4.40	8.07	4½-4½	$b^2H-z^4G^o$
3368.73	A	10	4.41	8.07	5½-4½	(91)
3372.13	A	15	4.40	8.06	4½-3½	
3335.46	A	30	4.41	8.11	5½-4½	$b^2H-z^2G^o$
3339.90	A	20	4.40	8.09	4½-3½	(92)
3324.87	P		4.40	8.11	4½-4½	
3157.52	A	1	4.41	8.32	5½-5½	$b^2H-y^4G^o$
3147.84	A	1	4.40	8.32	4½-5½	(93)
3135.74	A	30	4.41	8.34	5½-6½	$b^2H-z^2I^o$
3134.33	A	25	4.40	8.33	4½-5½	(94)
3143.91	A	7	4.41	8.33	5½-5½	
3028.647	B	80	4.41	8.49	5½-5½	$b^2H-z^2H^o$
3041.74	A	50	4.40	8.45	4½-4½	(95)
3050.75	D	4	4.41	8.45	5½-4½	
3017.80	A	5	4.40	8.49	4½-5½	
*2968.21 §	A	3	4.41	8.57	5½-6½	$b^2H-y^4H^o$ (98)
2958.54	A	2	4.41	8.58	5½-4½	$b^2H-x^4F^o$ (97)
3625.30	P		4.48	7.88	4½-5½	$a^2G-z^4H^o$
3621.51	D	(1)	4.46	7.86	3½-4½	(98)
3844.12	P		4.48	7.86	4½-4½	
3835.43	P		4.46	7.85	3½-3½	
*3658.19	A	20	4.48	7.85	4½-3½?	
3428.94	A	7	4.46	8.06	3½-3½	$a^2G-z^4G^o$ (99)
3399.54	A	18	4.46	8.11	4½-4½	$a^2G-z^2G^o$
3395.62	A	20	4.46	8.09	3½-3½	(100)
3415.47	D	1	4.46	8.09	4½-3½	
3199.87	A	10	4.46	8.31	3½-2½	$a^2G-y^4G^o$ (101)
3079.34	A	15	4.48	8.49	4½-5½	$a^2G-z^2H^o$
3087.90	A	20	4.46	8.45	3½-4½	(102)
3104.29	A	3	4.46	8.45	4½-4½	
3077.24	A	18	4.48	8.49	4½-3½	$a^2G-z^2F^o$
3077.79	A	25	4.46	8.47	3½-2½	(103)
3081.14	P		4.46	8.49	3½-3½	
2954.67	D	10	4.48	8.85	4½-4½	$a^2G-y^2G^o$
*2957.58	A	5	4.46	8.63	3½-3½	(104)
6053.48	A	10	4.72	6.76	3½-3½	$c^4D-z^4D^o$
6129.23	A	7	4.73	6.74	2½-2½	(105)
6195.18	A	3	4.74	6.73	1½-1½	
6239.77	A	1	4.74	6.72	½- ½	
6112.36	A	2	4.72	6.74	3½-2½	
6176.95	A	2	4.73	6.73	2½-1½	
8226.88	A	1	4.74	6.72	1½- ½	
6070.08	A	2	4.73	6.78	2½-3½	
6147.15	A	3	4.74	6.74	1½-2½	
6208.18	A	3	4.74	6.73	½-1½	
3895.16	A	2	4.74	7.91	½-1½	$c^4D-y^4D^o$ (106)
3513.03	A	10	4.72	8.24	3½-2½	$c^4D-y^4P^o$
3565.31	A	5	4.73	8.19	2½-1½	(107)
3584.01	P		4.74	8.18	1½- ½	
3518.62	A	3	4.73	8.24	2½-2½	
3571.37	A	3	4.74	8.19	1½-1½	
3588.30	A	2	4.74	8.18	½- ½	
3524.54	P		4.74	8.24	1½-2½	
3575.69	P		4.74	8.19	½-1½	
*3506.61	A	1	4.74	8.26	1½- ½	$c^4D-z^2P^o$ (108)
3478.17	A	3	4.72	8.27	3½-2½	$c^4D-z^2D^o$
3528.23	A	1	4.73	8.23	2½-1½	(109)
*3489.45	A	2	4.74	8.27	1½-2½	
3438.46	A	0	4.72	8.31	3½-2½	$c^4D-y^4G^o$
3445.04	A	5	4.73	8.31	2½-3½	(110)
3426.13	D	8	4.72	8.33	3½-4½	$c^4D-y^4F^o$
3437.93	A	2	4.73	8.32	2½-3½	(111)
3444.34	A	4	4.74	8.32	1½-2½	
3449.28	A	2	4.74	8.32	½-1½	
*3376.72	A	5	4.72	8.38	3½-3½	$c^4D-x^4D^o$
3388.79	P		4.73	8.38	2½-2½	(112)
3387.98	A	3	4.74	8.38	1½-1½	
3278.79	A	2	4.72	8.49	3½-3½	$c^4D-z^2F^o$ (113)
3201.28	A	25	4.72	8.58	3½-4½	$c^4D-x^4F^o$
3205.11	A	25	4.73	8.58	2½-3½	(114)
3212.91	A	18	4.74	8.58	1½-2½	
3229.89	A	10	4.74	8.56	½-1½	
3200.45	A	10	4.72	8.58	3½-3½	
3208.02	A	8	4.73	8.58	2½-2½	
3226.36	A	4	4.74	8.58	1½-1½	
3164.48	A	1	4.74	8.84	1½-2½	$c^4D-y^2P^o$
*3198.40	A	3	4.74	8.60	1½-1½	(115)
*3073.47	A	8	4.73	8.75	2½-3½	$c^4D-y^2P^o$
3102.58	A	2	4.74	8.71	1½-2½	(116)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
3727.37	A	40	4.76	8.07	4½-4½	$b^2G-z^4G^\circ$
3737.55	A	10	4.75	8.06	3½-3½	(117)
3751.60	A	3 Zr?	4.75	8.04	3½-2½	
3686.67	A	20	4.76	8.11	4½-4½	$b^2G-z^2G^\circ$
3698.00	A	35	4.75	8.09	3½-3½	(118)
3705.40	P		4.76	8.09	4½-3½	
3879.34	P		4.75	8.11	3½-4½	
3313.08	A	20	4.78	8.49	4½-5½	$b^2G-z^2H^\circ$
3335.93	A	4	4.75	8.45	3½-4½	(119)
3341.98	A	5	4.78	8.45	4½-4½	
•3310.65	A	35	4.76	8.49	4½-3½	$b^2G-z^2F^\circ$
3324.10	A	20	4.75	8.47	3½-2½	(120)
3304.73	A	5	4.75	8.49	3½-3½	
3266.25	A	8	4.76	8.54	4½-5½	$b^2G-y^4H^\circ$
3279.54	A	5	4.75	8.52	3½-4½	(121)
3231.84	A	8	4.78	8.58	4½-4½	$b^2G-x^4F^\circ$ (122)
3169.20	A	25	4.76	8.65	4½-4½	$b^2G-y^2G^\circ$
3184.36	A	15	4.75	8.63	3½-3½	(123)
3189.85	A	12	4.76	8.63	4½-3½	
m3163.77	P	Cr	4.75	8.65	3½-4½	
3140.21	A	25	4.76	8.69	4½-5½	$b^2G-y^2H^\circ$
3135.35	A	20	4.75	8.69	3½-4½	(124)
3140.67	A	1	4.76	8.69	4½-4½	
3093.48	A	40	4.76	8.75	4½-5½	$b^2G-x^4G^\circ$
3107.58	A	50	4.75	8.73	3½-4½	(125)
3112.81	P		4.76	8.73	4½-4½	
m3133.12	P	Cr+	4.75	8.69	3½-3½	
3142.97	A	8	4.75	8.68	3½-2½	
3096.11	A	35	4.76	8.75	4½-3½	$b^2G-y^2F^\circ$
3118.78	A	20	4.75	8.71	3½-2½	(126)
3090.94	A	2w	4.75	8.75	3½-3½	
4161.37	P		4.92	7.88	4½-5½	$c^2G-z^4H^\circ$
4161.56	P		4.90	7.88	3½-4½	(127)
4186.08	P		4.92	7.86	4½-4½	
4179.92	P		4.90	7.85	3½-3½	
4204.66	P		4.92	7.85	4½-3½	
3905.88	P		4.92	8.08	4½-5½	$c^2G-z^4I^\circ$
3915.30	P		4.90	8.05	3½-4½	(128)
3936.95	A	1	4.92	8.05	4½-4½	
3862.17	P		4.92	8.11	4½-5½	$c^2G-z^4G^\circ$
3889.90	P		4.90	8.07	3½-4½	(129)
3911.32	A	3	4.92	8.07	4½-4½	
3909.25	P		4.90	8.08	3½-3½	
3930.88	P		4.92	8.06	4½-3½	
3924.65	P		4.90	8.04	3½-2½	
3866.54	A	7	4.92	8.11	4½-4½	$c^2G-z^2G^\circ$
3868.01	A	5	4.90	8.09	3½-3½	(130)
3696.78	A	8	4.90	8.24	3½-2½	$c^2G-y^4F^\circ$ (131)
3814.26	A	2	4.90	8.31	3½-2½	$c^2G-y^4G^\circ$ (132)
3608.68	A	3	4.90	8.32	3½-2½	$c^2G-y^4F^\circ$ (133)
3583.92	A	5	4.92	8.38	4½-3½	$c^2G-x^4D^\circ$
3547.10	A	3	4.90	8.38	3½-2½	(134)
3546.15	P		4.90	8.38	3½-3½	
3457.62	A	30	4.92	8.49	4½-5½	$c^2G-z^2H^\circ$
3473.07	A	25	4.90	8.45	3½-4½	(135)
3489.07	A	2	4.92	8.45	4½-4½	
3454.98	A	35	4.92	8.49	4½-3½	$c^2G-z^2F^\circ$
3459.29	A	25	4.90	8.47	3½-2½	(136)
3301.21	A	18	4.92	8.65	4½-4½	$c^2G-y^2G^\circ$
3308.15	A	18	4.90	8.63	3½-3½	(137)
3285.96	A	20	4.90	8.65	3½-4½	
3289.77	A	15	4.92	8.69	4½-5½	$c^2G-y^2H^\circ$
3255.30	A	15	4.90	8.69	3½-4½	(138)
3235.26	A	4	4.90	8.71	3½-2½	$c^2G-y^2F^\circ$ (139)
3219.13	A	18	4.92	8.75	4½-5½	$c^2G-x^4G^\circ$
3225.39	A	12	4.90	8.73	3½-4½	(140)
3240.07	A	7	4.92	8.73	4½-4½	
•2957.56	A	5	4.90	9.07	3½-3½	$c^2G-w^4D^\circ$ (141)
3945.11	D	(1)	4.92	8.05	3½-4½	$c^2F-z^4I^\circ$ (142)
3874.41	P		4.92	8.11	3½-4½	$c^2F-z^2G^\circ$
3874.78	P		4.91	8.09	2½-3½	(143)
3895.12	A	1	4.92	8.09	3½-3½	
3723.40	A	15	4.92	8.24	3½-2½	$c^2F-y^4F^\circ$
3758.55	A	3	4.91	8.19	2½-1½	(144)
3684.25	A	25	4.92	8.27	3½-2½	$c^2F-z^2D^\circ$
3715.45	A	20	4.91	8.23	2½-1½	(145)
3668.02	P		4.91	8.27	2½-2½	
•3858.19	A	20	4.91	8.28	2½-1½	?$c^2F-z^2P^\circ$ (148)
3825.92	P		4.92	8.33	3½-4½	$c^2F-y^4F^\circ$
3615.45	P		4.91	8.32	2½-3½	(147)
3833.16	P		4.92	8.32	3½-3½	
3618.29	P		4.91	8.32	2½-2½	
3834.04	A	10	4.92	8.32	3½-2½	
3817.32	A	7	4.91	8.32	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
3461.28	A	3	4.92	8.49	3½-3½	$c^2F-z^2F^\circ$
•3466.25	A	2	4.91	8.47	2½-2½	(148)
m3482.56	P	Cr+	4.92	8.47	3½-2½	
3445.20	P		4.91	8.49	2½-3½	
3374.99	A	8	4.92	8.58	3½-4½	$c^2F-x^4F^\circ$
3377.36	A	5	4.92	8.58	3½-2½	(149)
•3376.72	A	5	4.91	8.56	2½-1½	
3306.95	A	50	4.92	8.65	3½-4½	$c^2F-y^2G^\circ$
3314.57	A	35	4.91	8.63	2½-3½	(150)
3329.45	A	4	4.92	8.63	3½-3½	
3275.92	A	10	4.92	8.69	3½-4½	$c^2F-y^2H^\circ$ (151)
3258.01	A	3	4.91	8.69	2½-3½	$c^2F-x^4G^\circ$
m3269.75	P	Cr+	4.91	8.68	2½-3½	(152)
3227.48	A	3	4.92	8.75	3½-3½	$c^2F-y^2F^\circ$
3241.38	A	4	4.91	8.71	2½-2½	(153)
3255.62	A	3	4.92	8.71	3½-2½	
3213.46	A	3	4.91	8.75	2½-3½	
3044.24	A	10	4.92	8.98	3½-4½	$c^2F-x^2G^\circ$
3038.04	A	6	4.91	8.97	2½-3½	(154)
4227.73	A	1	4.96	7.88	6½-5½	$b^2I-z^4H^\circ$ (155)
3650.37	A	40	4.96	8.34	6½-6½	$b^2I-z^2I^\circ$
3684.95	A	30	4.97	8.33	5½-5½	(156)
3661.44	A	3	4.96	8.33	6½-5½	
3653.85	P		4.97	8.34	5½-6½	
•3503.36 §	A	3	4.96	8.49	6½-5½	$b^2I-z^2H^\circ$
3539.00	A	4	4.97	8.45	5½-4½	(157)
•3508.61	A	1	4.97	8.49	5½-5½	
•3310.65	A	35	4.96	8.69	6½-5½	$b^2I-y^2H^\circ$
3314.06	A	18	4.97	8.69	5½-4½	(158)
3258.77	A	30	4.96	8.75	6½-5½	$b^2I-x^4G^\circ$
3283.04	A	20	4.97	8.73	5½-4½	(159)
3281.58	A	4	4.97	8.75	5½-5½	
•2965.19	A	2	4.96	9.13	6½-6½	b^2I-i° (160)
4195.41	A	10	5.30	8.24	2½-2½	$b^2D-y^4P^\circ$
4278.10	A	1	5.31	8.19	1½-1½	(161)
4145.77	A	25	5.30	8.27	2½-2½	$b^2D-z^2D^\circ$
4234.85	A	20	5.31	8.23	1½-1½	(162)
4209.02	A	3	5.30	8.23	2½-1½	
4181.05	A	2	5.31	8.27	1½-2½	
4135.77	P		5.30	8.28	2½-1½	$b^2D-z^2P^\circ$
4185.50	P		5.31	8.26	1½- ½	(163)
4151.00	A	5	5.31	8.28	1½-1½	
4089.49	A	2	5.30	8.31	2½-2½	$b^2D-y^4G^\circ$ (164)
4081.21	A	1	5.30	8.32	2½-3½	$b^2D-y^4F^\circ$
4083.30	A	10	5.30	8.32	2½-2½	(165)
4098.44	A	8	5.31	8.32	1½-1½	
4002.48	A	5	5.30	8.38	2½-3½	$b^2D-x^4D^\circ$
4017.98	A	3	5.31	8.38	1½-2½	(166)
3865.59	A	75	5.30	8.49	2½-3½	$b^2D-z^2F^\circ$
3905.64	A	25	5.31	8.47	1½-2½	(167)
3892.14	A	4	5.30	8.47	2½-2½	
3701.90	A	4	5.30	8.63	2½-3½	$b^2D-y^2G^\circ$ (168)
3694.98	A	4	5.30	8.64	2½-2½	$b^2D-y^2D^\circ$
3707.13	A	3	5.31	8.64	1½-2½	(169)
m3631.48	P	Cr+	5.30	8.69	2½-3½	$b^2D-x^4G^\circ$
3657.94	A	1	5.31	8.68	1½-2½	(170)
3576.23	P		5.30	8.75	2½-3½	$b^2D-y^2F^\circ$
3622.45	A	1	5.31	8.71	1½-2½	(171)
3610.85	P		5.30	8.71	2½-2½	
3276.28	A	1	5.30	9.06	2½-1½	$b^2D-w^4D^\circ$
•3286.34 §	A	0	5.31	9.06	1½- ½	(172)
3202.52	A	15	5.30	9.15	2½-3½	$b^2D-x^2F^\circ$
3178.79	A	7	5.31	9.19	1½-2½	(173)
3169.85	A	2w	5.30	9.19	2½-2½	
3190.69	A	8	5.31	9.17	1½-2½	$b^2D-w^4F^\circ$ (174)
3141.80	A	4	5.30	9.22	2½-1½	$b^2D-x^4P^\circ$ (175)
4781.42	A	1	5.65	8.24	2½-2½	$c^2D-y^4P^\circ$
4832.97	P		5.84	8.19	1½-1½	(178)
4697.62	A	2	5.65	8.27	2½-2½	$c^2D-z^2D^\circ$ (177)
4684.77	A	1	5.65	8.28	2½-1½	$c^2D-z^2P^\circ$
4715.12	D	1	5.84	8.28	1½- ½	(178)
4671.38	P		5.84	8.28	1½-1½	
4341.09	A	7	5.65	8.49	2½-3½	$c^2D-z^2F^\circ$
•4382.93 §	A	3	5.64	8.47	1½-2½	(179)
4374.81	P		5.65	8.47	2½-2½	
4304.83	P		5.65	8.58	2½-3½	$c^2D-x^4F^\circ$
4199.02	P		5.84	8.58	1½-2½	(180)
4209.84	P		5.85	8.58	2½-2½	
4222.00	A	1	5.64	8.56	1½-1½	
4232.98	P		5.65	8.56	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cr II continued						
4127.08	A	3	5.65	8.64	2½-2½	$c^2D-y^2D^\circ$
4170.86	A	1	5.64	8.60	1½-1½	(181)
4181.50	A	1	5.65	8.60	2½-1½	
4116.66	A	2	5.64	8.64	1½-2½	
4048.02	P		5.65	8.69	2½-3½	$c^2D-x^4G^\circ$
4056.07	A	4	5.64	8.68	1½-2½	(182)
4066.16	P		5.65	8.68	2½-2½	
3979.51	A	20	5.65	8.75	2½-3½	$c^2D-y^2F^\circ$
•4012.50 §	A	30	5.64	8.71	1½-2½	(183)
4022.36	A	3	5.65	8.71	2½-2½	
3522.13	A	7	5.65	9.15	2½-3½	$c^2D-x^2F^\circ$ (184)
m3484.16	P	Cr+	5.65	9.19	2½-3½	$c^2D-w^4F^\circ$
•3489.45	A	2	5.64	9.17	1½-2½	(185)
3125.79	A	5	5.65	9.59	2½-1½	$c^2D-y^2P^\circ$
3113.59	A	5	5.64	9.60	1½- ½	(186)
6089.69	A	15	6.46	8.49	4½-5½	$d^2G-z^2H^\circ$
6179.17	A	10	6.46	8.45	3½-4½	(187)
6188.00	P		6.46	8.45	4½-4½	
6081.51	A	3	6.46	8.49	4½-3½	$d^2G-z^2F^\circ$
6138.77	A	2	6.46	8.47	3½-2½	(188)
5820.63	A	12	6.46	8.65	4½-4½	$d^2G-y^2G^\circ$
5678.42	A	10	6.46	8.63	3½-3½	(189)
4901.65	A	15	6.46	8.98	4½-4½	$d^2G-x^2G^\circ$
4912.49	A	12	6.46	8.97	3½-3½	(190)
4465.78	A	4	6.46	9.22	4½-5½	$d^2G-x^2H^\circ$
4511.82	P		6.46	9.19	3½-4½	(191)
4516.56	P		6.46	9.19	4½-4½	
4256.16	A	5	6.46	9.36	4½-4½	$d^2G-w^2G^\circ$
4268.93	A	1	6.46	9.35	3½-3½	(192)
4070.90	A	10	6.46	9.49	4½-3½	$d^2G-w^2F^\circ$
4049.14	A	18	6.46	9.50	3½-2½	(193)
4067.05	P		6.46	9.49	3½-3½	
4038.03	A	25	6.46	9.52	4½-5½	$d^2G-w^2H^\circ$
4003.33	A	25	6.46	9.54	3½-4½	(194)
4007.04	P		6.46	9.54	4½-4½	
3089.75	A	1	6.46	10.45	4½-3½	$d^2G-u^2F^\circ$ (195)
6418.87	A	7	6.66	8.58	4½-4½	$c^4F-x^4F^\circ$
6271.83	A	5	6.61	8.58	3½-3½	(196)
6168.46	A	2	6.58	8.58	2½-2½	
6415.59	A	1	6.66	8.58	4½-3½	
6282.92	A	2	6.61	8.58	3½-2½	
6274.94	A	1	6.61	8.58	3½-4½	
6088.00	A	7	6.66	8.69	4½-5½	$c^4F-y^2H^\circ$
6069.69	A	1	6.66	8.69	4½-4½	(197)
5895.90	A	4	6.66	8.75	4½-5½	$c^4F-x^4G^\circ$
5841.86	A	5	6.61	8.73	3½-4½	(198)
5827.24	A	5	6.58	8.69	2½-3½	
5110.43	A	2	6.68	9.07	4½-3½	$c^4F-w^4D^\circ$ (199)
4857.60	A	2	6.66	9.20	4½-4½	$c^4F-w^4F^\circ$ (200)
5137.09	A	7	6.79	9.20	2½-2½	$c^4P-x^4P^\circ$
5091.14	A	2	6.80	9.22	1½-1½	(201)
5076.15	A	4	6.79	9.22	2½-1½	

Strongest Unclassified Lines of Cr II

6305.60	A	4	
5913.87	A	3	
4952.78	A	10	
3814.00	A	12	
3801.21	A	10	Cr II?
3778.69	A	6	
3750.56	A	12	
3711.29	A	7	
3495.56	A	20	
3198.00	A	15	

Mn I I	P	7.40	Anal B	List B	May 1941
5394.674	B	10	0.00	2.29	2½-3½ $a^6S-z^8P^\circ$
5432.548	B	4	0.00	2.27	2½-2½ (1)
4030.755 //	B	200R	0.00	3.06	2½-3½ $a^6S-z^6P^\circ$
4033.073	B	150R	0.00	3.06	2½-2½ (2)
4034.490	B	100R	0.00	3.06	2½-1½
3224.761	B	10	0.00	3.83	2½-2½ $a^6S-z^4P^\circ$
3216.946	B	8	0.00	3.84	2½-1½ (3)
5341.065	B	20	2.11	4.42	4½-3½ $a^6D-y^6P^\circ$
5420.362	B	10	2.13	4.41	3½-2½ (4)
•5481.396	B	4	2.15	4.41	2½-1½
5407.424	B	5	2.13	4.42	3½-3½
5470.638	B	8	2.15	4.41	2½-2½
5516.771	B	7	2.17	4.41	1½-1½
5457.471	B	1	2.15	4.42	2½-3½
5505.889	B	2	2.17	4.41	1½-2½
5537.756	B	5	2.18	4.41	½-1½

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mn I continued						
4041.361	B	50r	2.11	5.16	4½-4½	a⁶D-z⁶D° (5)
4055.543	B	20	2.13	5.18	3½-3½	
4063.528	B	8	2.15	5.19	3½-3½	
4068.003	B	(2)	2.17	5.20	1½-1½	
4070.279	B	5	2.18	5.21	½- ½	
4018.102	B	20	2.11	5.18	4½-3½	
4035.728	B	15	2.13	5.19	3½-2½	
4048.755	B	15	2.15	5.20	3½-1½	
4058.930	B	10	2.17	5.21	1½- ½	
4079.241	B	12	2.13	5.16	3½-4½	
4083.628	B	12	2.15	5.18	2½-3½	
4082.944	B	12	2.17	5.19	1½-2½	
4079.422	B	10	2.18	5.20	½-1½	
3806.719	B	20r	2.11	5.35	4½-5½	a⁶D-z⁶F° (6)
3823.513	B	20r	2.13	5.36	3½-4½	
3834.364	B	12	2.15	5.37	2½-3½	
3841.082	B	10	2.17	5.38	1½-2½	
3843.983	B	7	2.18	5.39	½-1½	
3790.215	B	10	2.11	5.36	4½-4½	
3809.592	B	10	2.13	5.37	3½-3½	
3823.893	B	10	2.15	5.38	2½-2½	
3833.862	B	8	2.17	5.39	1½-1½	
3839.777	B	8	2.18	5.39	½- ½	
3776.527	B	(1)	2.11	5.37	4½-3½	
3799.259	B	4	2.13	5.38	3½-2½	
3816.753	B	5	2.15	5.39	2½-1½	
3829.680	B	5	2.17	5.39	1½- ½	
3670.517	B	5	2.11	5.47	4½-4½	a⁶D-z⁴F° (7)
3669.838	B	4	2.13	5.50	3½-3½	
3669.399	B	(1)	2.15	5.52	2½-2½	
3639.14	P		2.11	5.50	4½-3½	
3701.730	B	4	2.13	5.47	3½-4½	
3692.812	B	(1)	2.15	5.50	2½-3½	
3685.212	B	(1)	2.17	5.52	1½-2½	
3678.46	P		2.18	5.53	½-1½	
3577.880	B	40	2.11	5.55	4½-3½	a⁶D-x⁶P° (8)
3586.543	B	30	2.13	5.57	3½-2½	
3595.119	B	20	2.15	5.59	2½-1½	
3607.537	B	20	2.13	5.55	3½-3½	
3608.494	B	20	2.15	5.57	2½-2½	
3610.399	B	20	2.17	5.59	1½-1½	
3629.741	B	12	2.15	5.55	2½-3½	
3623.792	B	15	2.17	5.57	1½-2½	
3619.284	B	15	2.18	5.59	½-1½	
3330.668	B	8	2.15	5.86	2½-1½	a⁶D-1° (9)
3343.731	B	4	2.17	5.86	1½-1½	
3351.424	C	(1)	2.18	5.86	½-1½	
3280.756	B	5	2.13	5.89	3½-2½	a⁶D-2° (10)
3311.905	B	6	2.17	5.89	1½-2½	
3296.027	B	4	2.15	5.90	2½-1½	a⁶D-4° (11)
3308.785	B	(3)	2.17	5.90	1½-1½	
3316.324	B	4	2.18	5.90	½-1½	
3254.039	B	5	2.11	5.90	4½-3½	a⁶D-3° (12)
3278.553	B	5	2.13	5.90	3½-3½	
3296.882	B	6	2.15	5.90	2½-3½	
3240.399	B	7	2.11	5.91	4½-	a⁶D-5° (13)
3264.711	B	10	2.13	5.91	3½-	
3228.090	B	30	2.11	5.93	4½-5½	a⁶D-y⁶F° (14)
3236.778	B	20	2.13	5.95	3½-4½	
3248.516	B	15	2.15	5.95	2½-3½	
3256.137	B	12	2.17	5.96	1½-2½	
3260.231	B	10	2.18	5.96	½-1½	
3212.884	B	15	2.11	5.95	4½-4½	
3230.719	B	12	2.13	5.95	3½-3½	
3243.780	B	12	2.15	5.96	2½-2½	
3252.948	B	12	2.17	5.96	1½-1½	
3258.413	B	10	2.18	5.96	½- ½	
3206.908	B	5	2.11	5.95	4½-3½	
3226.034	B	6	2.13	5.96	3½-2½	
3240.616	B	5	2.15	5.96	2½-1½	
3251.135	B	5	2.17	5.96	1½- ½	
3044.567	B	50	2.11	6.16	4½-3½	a⁶D-w⁶P° (15)
3054.362	B	40	2.13	6.17	3½-2½	
3062.119	B	20	2.15	6.18	2½-1½	
3066.019	B	20	2.13	6.16	3½-3½	
3070.266	B	20	2.15	6.17	2½-2½	
3073.126	B	20	2.17	6.18	1½-1½	
3082.052	B	(2)	2.15	6.16	2½-3½	
3081.330	B	10	2.17	6.17	1½-2½	
3079.627	B	15	2.18	6.18	½-1½	
4823.516	B	50	2.31	4.87	4½-3½	z⁸P°-e⁸S (16)
4783.420	B	50	2.29	4.87	3½-3½	
4754.042	B	50	2.27	4.87	2½-3½	
4370.875	B	(1)	2.29	5.11	3½-2½	z⁸P°-e⁶S † (17)
3569.493	B	60	2.31	5.77	4½-5½	z⁸P°-e⁸D (18)
3547.802	B	50	2.29	5.77	3½-4½	
3531.848	B	30	2.27	5.77	2½-3½	
3569.804	B	40	2.31	5.77	4½-4½	
3548.029	B	40	2.29	5.77	3½-3½	
3531.998	B	50	2.27	5.77	2½-2½	
3570.041	B	20	2.31	5.77	4½-3½	
3548.202	B	30	2.29	5.77	3½-2½	
3532.121	B	50	2.27	5.77	2½-1½	
3178.495	B	15	2.31	6.19	4½-3½	z⁸P°-f⁸S (19)
3161.039	B	15	2.29	6.19	3½-3½	
3148.179	B	15	2.27	6.19	2½-3½	
4965.881	B	3	2.88	5.36	3½-4½	a⁴D-z⁶F° (20)
5004.907	B	2	2.91	5.37	2½-3½	
5029.812	B	(1)	2.93	5.38	1½-2½	
5042.589	B	(1)	2.94	5.39	½-1½	
4942.418	B	(2)	2.88	5.37	3½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mn I continued						
4762.376	B	30	2.88	5.47	3½-4½	a⁴D-z⁴F° (21)
4766.430	B	20	2.91	5.50	2½-3½	
4765.859	B	10	2.93	5.52	1½-2½	
4761.526	B	10	2.94	5.53	½-1½	
4709.715	B	10	2.88	5.50	3½-3½	
4727.476	B	10	2.91	5.52	2½-2½	
4739.108	B	8	2.93	5.53	1½-1½	
4671.688	B	3	2.88	5.52	3½-2½	
4701.159	B	3	2.91	5.53	2½-1½	
4451.586	B	15	2.88	5.65	3½-3½	a⁴D-z⁴D° (22)
4464.677	B	8	2.91	5.67	2½-2½	
4470.138	B	6	2.93	5.69	1½-1½	
4472.792	B	5	2.94	5.70	½- ½	
4414.879	B	10	2.88	5.67	3½-2½	
4436.352	B	8	2.91	5.69	2½-1½	
4453.005	B	6	2.93	5.70	1½- ½	
4502.320	B	7	2.91	5.65	2½-3½	
4498.897	B	7	2.93	5.67	1½-2½	
4490.081	B	5	2.94	5.69	½-1½	
4235.290	B	8	2.88	5.79	3½-2½	a⁴D-y⁴P° (23)
4235.140	B	6	2.91	5.82	2½-1½	
4239.725	B	5	2.93	5.84	1½- ½	
4281.099	B	6	2.91	5.79	2½-2½	
4265.924	B	6	2.93	5.82	1½-1½	
4257.659	B	5	2.94	5.84	½- ½	
4312.550	B	3	2.93	5.79	1½-2½	
4284.084	B	(4)	2.94	5.82	½-1½	
3696.568	B	8	2.88	6.21	3½-4½	a⁴D-y⁴F° (24)
3738.889	B	(1)	2.91	6.22	2½-3½	
3750.763	B	(3)	2.93	6.22	1½-2½	
3763.377	B	(3)	2.94	6.22	½-1½	
3694.115	B	(1)	2.88	6.22	3½-3½	
3726.931	B	(1)	2.91	6.22	2½-2½	
3601.782	C	(1)	2.91	6.33	2½-2½	a⁴D-x⁴P° (25)
3605.691	B	(1)	2.93	6.35	1½-1½	
3583.676	B	(3)	2.91	6.35	2½-1½	
3589.973	C	(1)	2.93	6.37	1½- ½	
3407.960	C	(1)	2.91	6.53	2½-2½	a⁴D-v⁶P° (26)
6031.802	C	50	3.06	5.11	3½-2½	z⁶P°-e⁶S (27)
6016.637	C	40	3.06	5.11	2½-3½	
6013.498	B	30	3.06	5.11	1½-2½	
4462.022	B	20	3.06	5.83	3½-4½	z⁶P°-e⁶D (28)
4458.362	B	12	3.06	5.83	2½-3½	
4455.821	B	6	3.06	5.83	1½-2½	
4461.085	B	8	3.06	5.83	3½-3½	
4457.549	B	8	3.06	5.83	2½-2½	
4455.318	B	6	3.06	5.83	1½-1½	
4460.377	B	3	3.06	5.83	3½-2½	
4457.045	B	5	3.06	5.83	2½-1½	
4455.012	B	5	3.06	5.83	1½- ½	
4061.742	B	5	3.06	6.10	3½-2½	z⁶P°-f⁶S (29)
4059.393	B	5	3.06	6.10	2½-2½	
4057.950	B	4	3.06	6.10	1½-2½	
3317.305	B	10n	3.06	6.78	3½-4½	z⁶P°-g⁶D (30)
3314.876	C	6n	3.06	6.78	2½-3½	
*3313.534	B	(4)	3.06	6.78	1½-2½	
3316.440	C	5n	3.06	6.78	3½-3½	
3314.393	C	6n	3.06	6.78	2½-2½	
5504.21	B	(2)	3.12	5.36	5½-4½	a⁴G-z⁶F° (31)
*5481.396	B	4	3.12	5.37	4½-3½	
5460.644	C	(1)	3.12	5.38	3½-2½	
5444.096	C	(1n)	3.12	5.39	2½-1½	
5510.174	C	(1)	3.12	5.36	4½-4½	
5255.325	B	4	3.12	5.47	5½-4½	a⁴G-z⁴F° (32)
5196.591	B	3	3.12	5.50	4½-3½	
5150.890	B	3	3.12	5.52	3½-2½	
*5117.937	B	3	3.12	5.53	2½-1½	
5260.771	B	(3)	3.12	5.47	4½-4½	
5197.216	B	1	3.12	5.50	3½-3½	
5149.13	B	(1)	3.12	5.52	2½-2½	
3986.826	B	3	3.12	6.21	5½-4½	a⁴G-y⁴F° (33)
3987.098	B	(1)	3.12	6.22	4½-3½	
3985.341	B	3	3.12	6.22	3½-2½	
3982.583	B	(3)	3.12	6.22	2½-1½	
3989.958	C	(1)	3.12	6.21	4½-4½	
3987.464	B	(3)	3.12	6.22	3½-3½	
3984.177	B	(1)	3.12	6.22	2½-2½	
3986.395	C	(3)	3.12	6.22	2½-3½	
3047.035	B	15	3.12	7.17	5½-5½	a⁴G-z⁴G° (34)
3045.593	B	12	3.12	7.17	4½-4½	
3043.356	B	9	3.12	7.18	3½-3½	
3040.603	B	12	3.12	7.18	2½-2½	
3043.770	B	(3)	3.12	7.17	5½-4½	
3043.143	B	(3)	3.12	7.18	4½-3½	
3041.324	B	4	3.12	7.18	3½-2½	
3048.864	B	5	3.12	7.17	4½-5½	
3045.808	B	5	3.12	7.17	3½-4½	
3042.733	B	4	3.12	7.18	2½-3½	
3022.749	B	10	3.12	7.20	5½-6½	a⁴G-z⁴H° (35)
3016.454	B	8	3.12	7.21	4½-5½	
3011.376	B	7	3.12	7.22	3½-4½	
3007.655	B	6	3.12	7.22	2½-3½	
3014.668	B	5	3.12	7.21	5½-5½	
3011.162	B	5	3.12	7.22	4½-4½	
3008.265	B	4	3.12	7.22	3½-3½	
5388.521	B	(3)	3.36	5.65	2½-3½	a⁴P-z⁴D° (36)
5348.069	B	(1)	3.36	5.67	1½-2½	
5317.095	B	(2)	3.37	5.69	½-1½	
5334.804	C	(1)	3.36	5.67	2½-2½	
5307.53	P		3.36	5.69	1½-1½	
5292.861	C	(1)	3.37	5.70	½- ½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mn I continued						
4147.532	B	(3)	3.36	6.33	2½-2½	a⁴P-x⁴P° (37)
4131.430	B	(1)	3.36	6.35	1½-1½	
4123.543	B	(1)	3.36	6.35	2½-1½	
*4110.903	B	(2)	3.36	6.37	1½- ½	
4155.525	B	(2)	3.36	6.33	1½-2½	
4137.257	B	(3)	3.37	6.35	½-1½	
3115.465	B	6	3.36	7.32	2½-3½	a⁴P-x⁴P° (38)
3108.635	B	(1)	3.36	7.33	3½-2½	
3107.774	B	(1)	3.36	7.33	1½-1½	
6491.712	B	15	3.75	5.65	3½-3½	b⁴D-z⁴D° (39)
6440.974	B	8	3.76	5.67	2½-2½	
6384.669	B	4	3.76	5.69	1½-1½	
6356.057	C	(2)	3.76	5.70	½- ½	
6413.92	C	(3)	3.75	5.67	3½-2½	
6382.169	B	(3)	3.76	5.69	2½-1½	
6349.748	C	(1)	3.76	5.70	1½- ½	
6519.371	B	(3)	3.76	5.65	2½-3½	
6443.492	B	(2)	3.76	5.67	1½-2½	
6391.214	C	(1)	3.76	5.69	½-1½	
4431.922	B	(1)	3.76	6.54	1½-1½	b⁴D-v⁶P° (40)
4436.025	B	(2n)	3.76	6.54	½-1½	
3462.748	C	(1)	3.76	7.32	2½-3½	b⁴D-x⁴P° (41)
3455.04	C	(2)	3.76	7.33	1½-2½	
5377.628	B	6	3.83	6.12	2½-1½	z⁴P°-e⁴S (42)
5399.489	B	4	3.84	6.12	1½-1½	
5413.687	B	2	3.84	6.12	½-1½	
4844.315	B	(2)	3.83	6.37	2½-2½	z⁴P°-e⁴P (43)
4843.19	B	(1n)	3.84	6.38	1½-1½	
4838.244	B	(1)	3.84	6.39	½-½	
4825.593	B	(1)	3.83	6.38	2½-1½	
4826.896	B	(2)	3.84	6.39	1½- ½	
4862.054	B	(3)	3.84	6.37	1½-2½	
4854.604	B	(2)	3.84	6.38	½-1½	
3926.467	B	10	3.83	6.97	2½-2½	z⁴P°-1 (44)
3800.552	B	4	3.83	7.07	2½-3½	z⁴P°-e⁴D
3785.421	B	(1)	3.84	7.10	1½-2½	(45)
3774.645	B	(1)	3.83	7.10	2½-2½	
9243.28	A	150	4.31	5.65	4½-3½	a⁴F-z⁴D° † (46)
9172.09	A	100	4.33	5.67	3½-2½	
9114.02	A	50	4.33	5.69	2½-1½	
9084.29	A	30	4.34	5.70	1½- ½	
*4110.903	B	(2)	4.31	7.32	4½-4½	a⁴F-x⁴P° (47)
4132.757	C	(1)	4.33	7.32	3½-3½	
4123.379	B	(1)	4.33	7.33	2½-2½	
4105.365	B	(3)	4.31	7.32	4½-3½	
4113.876	B	(2)	4.33	7.33	3½-1½	
4045.133	B	4*	4.31	7.36	4½-5½	a⁴F-y⁴G° (48)
4048.999	C	(2)	4.33	7.37	3½-4½	
4052.472	B	(2)	4.33	7.38	2½-3½	
4055.214	B	(1)	4.34	7.38	1½-2½	
8740.93	A	1000w	4.42	5.83	3½-4½	y⁶P°-e⁶D (49)
8703.76	A	500w	4.41	5.83	2½-3½	
8673.97	A	200w	4.41	5.83	1½-2½	
8737.32	A	300w	4.42	5.83	3½-3½	
8701.05	A	300w	4.41	5.83	2½-2½	
8672.06	A	300w	4.41	5.83	1½-1½	
8734.60	A	30w	4.42	5.83	3½-2½	
8699.13	A	100w	4.41	5.83	2½-1½	
8670.92	A	200w	4.41	5.83	1½- ½	
7326.51	A	400 l	4.42	6.10	3½-2½	y⁶P°-f⁶S (50)
7302.89	A	300 l	4.41	6.10	2½-2½	
7283.80	A	250 l	4.41	6.10	1½-2½	
6605.546	D	6n	4.42	6.28	3½-2½	y⁶P°-g⁶S (51)
6586.343	B	(1)	4.41	6.28	2½-2½	
6570.834	B	(1)	4.41	6.28	1½-2½	
4565.73	B	(1n)	4.41	7.11	2½-1½	y⁶P°-e⁴D (52)
8431.20	A	20Ns	5.11	6.58	2½-3½	e⁶S-u⁶P° (53)
8409.88	A	15Ns	5.11	6.58	2½-2½	
8395.87	A	10Ns	5.11	6.58	2½-1½	
7764.72	A	250nl	5.35	6.94	5½-4½	z⁶P°-f⁶D † (54)
7733.24	A	150nl	5.36	6.96	4½-3½	
7709.98	A	40Nl	5.37	6.97	3½-2½	
7706.52	A	10Nl	5.38	6.98	2½-1½	
7677.46	A	2Nl	5.39	7.00	1½- ½†	
7680.22	A	200	5.47	7.07	4½-3½	z⁴P°-e⁴D † (55)
7712.42	A	100n	5.50	7.10	3½-2½	
7734.43	A	50n	5.52	7.11	2½-1½	
7755.15	A	20Nl	5.53	7.12	1½- ½	
8929.72	A	60n	5.55	6.94	3½-4½	x⁶P°-f⁶D † (56)
8926.06	A	15n	5.57	6.96	2½-3½	
8901.0	A	3p†	5.59	6.97	1½-2½	
9429.58	A	30n	5.65	6.96	3½-3½	z⁴D°-f⁶D † (57)
9476.57	A	4n	5.67	6.97	2½-2½	
9535.72	A	5n	5.69	6.98	1½-1½	
9336.47	A	40n	5.65	6.97	3½-2½	z⁴D°-1 (58)
9502.12	A	8n	5.67	6.97	2½-2½	
9633.02	A	4p†	5.69	6.97	1½-2½	
8654.63	A	40n	5.65	7.07	3½-3½	z⁴D°-e⁴D † (59)
8659.38	A	10n	5.67	7.10	2½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mn I continued						
9608.56	A	100n	5.79	7.07	3½-3½	$y^4P^o - e^4D$ †
9676.50	A	40	5.83	7.10	1½-2½	(60)
9684.9	A	15	5.84	7.11	½-1½	
Strongest Unclassified Lines of Mn I						
9686.3	A	15				
8380.77	A	40				
8312.43	A	40nl				
7942.91	A	25				
7347.82	A	15				
5816.844	B	(5)				
5780.189	B	(6)				
5738.286	B	(6)				
5551.985	B	(3)				
4636.544	B	4	III			
4605.363	B	4	V			
4411.878	B	3	IV			
4045.206	B	4*	V			
4036.435	B	4	V			
3924.075	B	3	IV			
3801.907	B	4	V			
3731.932	B	5	V			
3718.930	B	5	V			
3693.667	B	6	V			
3676.959	B	4	V			
3660.404	B	5	V			
3420.795	B	4	V			
3345.352	B	4	IV			
3320.693	B	4	IV			
3303.278	B	3	V			
3298.224	B	5	IV			
3270.351	B	3	V			
3268.732	B	3	V			
3267.794	B	4	V			
3237.414	B	20n	IV			
3235.003	B	10n 15n	IV IV			
3233.968	B	15n	IV			
3142.670	B	4	V			
3101.557	B	5	III?			
3097.063	B	8	IV			

Mn II I P 15.8 Anal C List A Aug 1941

3438.978	A	20	1.17	4.76	2-3	$a^5S - z^7P^o$
3460.039	A	8	1.17	4.74	2-2	(1)
4083.67	P		1.77	4.79	4-4	$a^5D - z^7P^o$
4174.31	P		1.80	4.76	3-3	(2)
4238.79	P		1.82	4.74	2-2	
4128.14	B	(2?)	1.77	4.76	4-3	
4205.37	P		1.80	4.74	3-2	
4128.87	P		1.80	4.79	3-4	
4207.23	P		1.82	4.76	2-3	
4260.47	P		1.84	4.74	1-2	
3441.983	A	100	1.77	5.35	4-3	$a^5D - z^5P^o$
3460.312	A	75	1.80	5.37	3-2	(3)
3474.124	A	40	1.82	5.38	2-1	
3474.037	A	50	1.80	5.35	3-3	$a^5D - z^5P^o$
3482.905	A	40	1.82	5.37	2-2	cont
3488.676	A	40	1.84	5.38	1-1	
3498.814	A	20	1.82	5.35	2-3	
3497.536	A	25	1.84	5.37	1-2	
3495.831	A	40	1.85	5.38	0-1	
7415.78	P		3.89	5.35	3-3	$a^5P - z^5P^o$
7369.73	P		3.69	5.37	2-2	(4)
7347.72	P		3.70	5.38	1-1	
7353.52	P		3.69	5.37	3-2	
7330.54	P		3.69	5.38	2-1	
7432.27	P		3.89	5.35	2-3	
7387.10	P		3.70	5.37	1-2	
4755.728	A	0n	5.37	7.97	5-6	$a^5F - z^5G^o$
4764.7	P		5.37	7.96	4-5	(5)
4738.29	B	—	5.36	7.96	3-4	
4730.361	B	—	5.35	7.96	2-3	
4727.9	P		5.35	7.96	1-2	
4343.987	A	2N	5.37	8.21	5-5	$a^5F - z^5F^o$
4336.756	B	(3)	5.37	8.23	4-4	(6)
4292.246	A	0N	5.36	8.23	3-3	
4283.772	A	0	5.35	8.23	2-2	
4284.425	A	0	5.35	8.23	1-1	
4325.1	P		5.37	8.23	5-4	
4345.6	P		5.37	8.21	4-5	
4300.197	B	(1)	5.36	8.23	3-4	
4206.375	A	0N	5.37	8.31	5-4	$a^5F - z^5D^o$
4259.203	A	0n	5.37	8.27	4-3	(7)
4253.02	C	(3)	5.36	8.26	3-2	
4244.26	C	(1)	5.35	8.26	2-1	
3685.049	A	-1N	5.37	8.72	5-5	$a^5F - y^5F^o$
3708.06	C	(1)	5.37	8.70	4-4	(8)
3709.88	C	(1)	5.36	8.68	3-3	
3717.53	C	(1)	5.35	8.67	2-2	
3724.81	C	(1)	5.35	8.66	1-1	
3706.91	C	(1)	5.37	8.70	5-4	
3729.49	C	(1)	5.37	8.68	4-3	
3725.29	C	(1)	5.36	8.67	3-2	
3688.20	C	(1)	5.37	8.72	4-5	
*3509.971	A	0	5.37	8.89	5-4	$a^5F - y^5D^o$
3482.06	C	(1)	5.37	8.92	4-3	(9)
3457.809	A	0n	5.36	8.93	3-2	
3449.5	P		5.35	8.93	2-1	
3446.0	P		5.35	8.93	1-0	
3029.041	A	50	5.35	9.43	3-2	$z^5P^o - e^5S$
3039.551	A	40	5.37	9.43	2-2	(10)
3046.266	A	30	5.38	9.43	1-2	
5302.320	A	30	9.82	12.15	5-	$e^7D - z^7F^o$
5299.278	A	25	9.82	12.15	4-	(11)
5296.968	A	20	9.82	12.15	3-	
5295.293	A	15	9.82	12.15	2-	
5294.216	A	10	9.82	12.15	1-	
3466.336	A	9	9.82	13.38	5-	$e^7D - y^7F^o$
3465.037	A	8	9.82	13.38	4-	(12)
3464.043	A	7	9.82	13.38	3-	
3463.330	A	6	9.82	13.38	2-	
3462.878	A	5	9.82	13.38	1-	
6122.438	A	40	10.14	12.16	4-5	$e^5D - x^5P^o$
6125.855	A	25	10.14	12.16	3-4	(13)
6128.735	A	20	10.14	12.16	2-3	
6130.794	A	15	10.14	12.16	1-2	
6131.917	A	15	10.14	12.16	0-1	
6122.799	A	8	10.14	12.16	4-4	
6126.210	A	10	10.14	12.16	3-3	
6129.022	A	10	10.14	12.16	2-2	
6131.005	A	5	10.14	12.16	1-1	
6123.164	A	-1	10.14	12.16	4-3	
6126.516	A	0	10.14	12.16	3-2	
6129.255	A	0	10.14	12.16	2-1	
3800.240	A	2	10.14	13.39	4-5	$e^5D - v^5F^o$
3801.633	A	3	10.14	13.39	3-4	(14)
3802.958	A	0	10.14	13.39	2-3	
3803.881	A	0	10.14	13.39	1-2	
3804.476	A	0	10.14	13.39	0-1	
3134.819	A	1	10.14	14.08	4-5	$e^5D - r^5F^o$
3135.507	A	0	10.14	14.08	3-4	(15)
3136.315	A	0	10.14	14.08	2-3	
6105.381	A	5	10.31	12.33	4-5	$y^7P^o - f^7D$
6050.446	A	3	10.29	12.33	3-4	(16)
6008.295	A	0	10.28	12.33	2-3	
6107.293	A	1	10.31	12.33	4-4	
6051.860	A	1	10.29	12.33	3-3	
6009.298	A	1	10.28	12.33	2-2	
6108.8	P		10.31	12.33	4-3	
6052.892	A	0	10.29	12.33	3-2	
6009.962	A	1	10.28	12.33	2-1	
4530.034	A	5	10.62	13.35	4-3	$x^7P^o - g^7S$
4510.210	A	3	10.61	13.35	3-3	(17)
4496.989	A	2	10.60	13.35	2-3	
4639.150	A	3	10.73	13.39	3-2	$w^5P^o - g^5S$
4647.585	A	2	10.73	13.39	2-2	(18)
4652.816	A	1	10.74	13.39	1-2	
6446.281	A	50N	12.15	14.06	6-	$z^7F^o - f^7G$
						(19)
6463.637	A	12	12.16	14.06	5-6	$x^5P^o - f^5G$
6463.195	A	10	12.16	14.06	4-5	(20)
6462.799	A	7	12.16	14.06	3-4	
6462.454	A	5	12.16	14.06	2-3	
6462.210	A	3	12.16	14.06	1-2	
3050.661	A	25	?	?	2-2	$^3P - ^3P^o$
3043.132	A	6	?	?	1-1	(21)
3034.810	A	6	?	?	2-1	
3033.591	A	4	?	?	1-0	
3059.064	A	10	?	?	1-2	
3049.027	A	8	?	?	0-1	

Measures inadequate for preparation of list of strongest unclassified lines of Mn II.

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I I P 7.858 Anal A List A Feb 1943						
5166.286	J	4	0.00	2.39	4-5	$a^5D-z^7D^o$
5221.43	P		0.05	2.41	3-4	(1)
5247.052	V	1	0.09	2.44	2-3	
5254.956	V	1	0.11	2.46	1-2	
5250.212	V	1	0.12	2.47	0-1	
5110.414	B	10	0.00	2.41	4-4	
5168.901	B	4	0.05	2.44	3-3	
5204.582	J	2	0.09	2.46	2-2	
5225.533	V	1	0.11	2.47	1-1	
*5060.079	T	(1)	0.00	2.44	4-3	
5127.68	P	⊙	0.05	2.46	3-2	
5175.71	P		0.09	2.46	2-1	
4375.932	B	9	0.00	2.82	4-5	$a^5D-z^7F^o$
4427.312	B	10	0.05	2.84	3-4	(2)
4461.654	B	8	0.09	2.85	2-3	
4482.171	J	4	0.11	2.86	1-2	
4489.741	B	3	0.12	2.87	0-1	
4347.239	V	(1)	0.00	2.84	4-4	
4405.02	P	⊙	0.05	2.85	3-3	
4445.48	U	(1)	0.09	2.86	2-2	
4471.68	P	(1)	0.11	2.87	1-1	
m4325.74	P	Fe	0.00	2.85	4-3	
4389.244	J	2	0.05	2.86	3-2	
4435.151	J	2	0.09	2.87	2-1	
m4466.57	P	Fe	0.11	2.87	1-0	
4216.186	B	8	0.00	2.93	4-4	$a^5D-z^7P^o$
4206.702	J	3	0.05	2.99	3-3	(3)
4199.97	W	1	0.09	3.03	2-2	R
4134.343	V	(1)	0.00	2.99	4-3	
4149.76	P	(1)	0.05	3.03	3-2	
*4291.466	I	4	0.05	2.93	3-4	
4258.320	J	2	0.09	2.99	2-3	
3859.913	B	300R	0.00	3.20	4-4	$a^5D-z^5D^o$
3886.284	B	40R	0.05	3.23	3-3	(4)
3899.709	B	30R	0.09	3.25	2-2	
3906.482	B	8	0.11	3.27	1-1	
3824.444	B	50r	0.00	3.23	4-3	
3856.373	B	50r	0.05	3.25	3-2	
3878.575	B	100r	0.09	3.27	2-1	
3895.658	B	25r	0.11	3.28	1-0	
3922.914	B	25R	0.05	3.20	3-4	
3930.299	B	25R	0.09	3.23	2-3	
3927.922	B	30R	0.11	3.25	1-2	
3920.260	B	20r	0.12	3.27	0-1	
3719.935	B	250R	0.00	3.32	4-5	$a^5D-z^5F^o$
3737.133	B	150R	0.05	3.35	3-4	(5)
3745.561	J	100R	0.09	3.38	2-3	
3748.264	B	60R	0.11	3.40	1-2	
3745.901	J	40r	0.12	3.42	0-1	
3679.915	B	40r	0.00	3.35	4-4	
3705.567	B	100r	0.05	3.38	3-3	
3722.564	B	50r	0.09	3.40	2-2	
3733.319	B	40r	0.11	3.42	1-1	
3649.304	J	5	0.00	3.38	4-3	
3683.054	G	10	0.05	3.40	3-2	
3707.828	V	20	0.09	3.42	2-1	
3440.610	J	150R	0.00	3.59	4-3	$a^5D-z^5P^o$
3440.989	J	75R	0.05	3.64	3-2	(6)
3443.878	A	50r	0.09	3.67	2-1	
3490.575	A	100r	0.05	3.59	3-3	
3475.450	G	70r	0.09	3.64	2-2	
3465.863	A	60r	0.11	3.67	1-1	
3526.039	J	20	0.09	3.59	2-3	
3497.843	A	40	0.11	3.64	1-2	
3476.704	A	40	0.12	3.67	0-1	
3193.214	V	10	0.00	3.86	4-4	$a^5D-z^3F^o$
3184.896	A	7	0.05	3.93	3-3	(7)
3180.756	G	5	0.09	3.97	2-2	R
3143.242	V	2	0.00	3.93	4-3	
3151.867	V	(1)	0.05	3.97	3-2	
3236.223	A	8	0.05	3.86	3-4	
3214.396	G	8	0.09	3.93	2-3	
3191.659	A	7	0.00	3.87	4-3	$a^5D-z^3D^o$
3197.00	V	(2)	0.05	3.91	3-2	(8)
3200.790	V	2	0.09	3.94	2-1	
3234.614	G	7	0.05	3.87	3-3	
3226.727	V	2	0.09	3.91	2-2	
m3219.77	P	Fe	0.11	3.94	1-1	
3265.046	G	8	0.09	3.87	2-3	
3246.005	G	8	0.11	3.91	1-2	
3229.123	G	4	0.12	3.94	0-1	
3020.643	V	200R	0.00	4.09	4-4	$a^5D-y^5D^o$
3021.074	G	150R	0.05	4.14	3-3	(9)
3030.495	V	100R	0.09	4.17	2-2	
3017.628	G	15r	0.11	4.20	1-1	
2983.574	G	125R	0.00	4.14	4-3	
2994.427	G	100R•	0.05	4.17	3-2	
3000.950	G	100R	0.09	4.20	2-1	
3008.139	G	60R	0.11	4.21	1-0	
3059.086	A	100R	0.05	4.09	3-4	
3047.605	A	100R	0.09	4.14	2-3	
3037.388	A	80R	0.11	4.17	1-2	
3025.843	K	50R	0.12	4.20	0-1	
2966.901	G	125R	0.00	4.16	4-5	$a^5D-y^5F^o$ †
2973.236	V	60R	0.05	4.20	3-4	(10)
2973.137	V	60R	0.09	4.24	2-3	
*2970.106	G	40R	0.11	4.26	1-2	
2965.255	A	20	0.12	4.28	0-1	
2953.940	A	50R	0.09	4.26	2-2	
2957.365	A	30R	0.11	4.28	1-1	
2981.446	A	20r	0.05	4.19	3-2	$a^5D-z^3P^o$
*2970.106	G	40R	0.09	4.24	2-1	(11)
2969.364	V	5	0.11	4.27	1-0	
3007.284	V	12r	0.09	4.19	2-2	
2986.456	G	3	0.11	4.24	1-1	
3024.033	C	15r	0.11	4.19	1-2	
2994.50	V	100R•	0.12	4.24	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
8047.60	O	15	0.86	2.39	5-5	$a^5F-z^7P^o$
8304.10	P	⊙	0.91	2.41	4-4	(12)
8310.98	P		0.95	2.44	3-3	
8388.23	P	⊙	0.99	2.46	2-2	
8425.89	P	⊙	1.01	2.47	1-1	
7913.866	E	6	0.86	2.41	5-4	
8075.13	O	4	0.91	2.44	4-3	
8204.93	P	⊙	0.95	2.46	3-2	
8307.61	P	⊙	0.99	2.47	2-1	
8349.05	P	⊙	0.91	2.39	4-5	
8447.63	P	⊙	0.95	2.41	3-4	
6358.692	I	3	0.86	2.80	5-6	$a^5F-z^7F^o$
m6462.72	P	Fe	0.91	2.82	4-5	(13)
6547.58	P		0.95	2.84	3-4	
6609.68	P	⊙	0.99	2.85	2-3	
6648.08	P	⊙	1.01	2.86	1-2	
6280.625	I	2	0.86	2.82	5-5	
6400.335	V	(2)	0.91	2.84	4-4	
6498.950	V	5	0.95	2.85	3-3	
6574.238	V	3	0.99	2.86	2-2	
6625.04	V	1	1.01	2.87	1-1	
6221.661	U	(-)	0.86	2.84	5-4	
6353.84	P	⊙	0.91	2.85	4-3	
6464.67	P		0.95	2.86	3-2	
6551.68	P	⊙	0.99	2.87	2-1	
6613.83	P	1	1.01	2.87	1-0	
5956.703	J	(3)	0.86	2.93	5-4	$a^5F-z^7P^o$
*5949.35	V	(2)	0.91	2.99	4-3	(14)
*5958.23	P	(2)	0.95	3.03	3-2	
6120.25	P	⊙	0.91	2.93	4-4	
5269.541	I	60	0.86	3.20	5-4	$a^5F-z^5D^o$
5328.042	I	50	0.91	3.23	4-3	(15)
5371.493	B	50	0.95	3.25	3-2	
5405.778	B	40	0.99	3.27	2-1	
5434.527	B	30	1.01	3.28	1-0	
5397.131	B	40	0.91	3.20	4-4	
5429.699	B	40	0.95	3.23	3-3	
5446.920	B	40	0.99	3.25	2-2	
5455.613	B	40	1.01	3.27	1-1	
5501.469	B	12	0.95	3.20	3-4	
5506.782	B	18	0.99	3.23	2-3	
5497.519	B	15	1.01	3.25	1-2	
5012.071	B	12	0.86	3.32	5-5	$a^5F-z^5F^o$
5051.636	B	10	0.91	3.35	4-4	(16)
5083.342	B	7	0.95	3.38	3-3	
5107.452	J	6	0.99	3.40	2-2	
5123.723	B	6	1.01	3.42	1-1	
4939.690	B	4	0.86	3.35	5-4	
4994.133	B	8	0.91	3.38	4-3	
5041.074	J	7	0.95	3.40	3-2	
5079.742	J	4	0.99	3.42	2-1	
5127.363	B	5	0.91	3.32	4-5	
5142.932	J	6	0.95	3.35	3-4	
5150.843	B	6	0.99	3.38	2-3	
5151.915	J	4	1.01	3.40	1-2	
m4611.35	P	Fe	0.91	3.59	4-3	$a^5F-z^5P^o$
4598.33	P	⊙	0.95	3.64	3-2	(17)
4597.06	P	⊙	0.99	3.67	2-1	
4687.30	P	⊙	0.95	3.59	3-3	
4653.49	P	⊙	0.99	3.64	2-2	
4633.05	P		1.01	3.67	1-1	
4744.64	P	⊙	0.99	3.59	2-3	
4690.38	P	⊙	1.01	3.64	1-2	
4100.745	J	3	0.86	3.86	5-4	$a^5F-z^3F^o$
4092.513	V	(1)	0.91	3.93	4-3	(18)
4096.81	P	⊙	0.95	3.97	3-2	
4177.597	J	4	0.91	3.86	4-4	
4153.173	J	4	0.95	3.93	3-3	
4139.933	J	2	0.99	3.97	2-2	
*4239.847	J	2	0.95	3.86	3-4	
4197.10	P	⊙	0.99	3.93	2-3	
4169.09	P	⊙	1.01	3.97	1-2	
4174.917	J	5	0.91	3.87	4-3	$a^5F-z^3D^o$
4173.749	J	4	0.95	3.91	3-2	(19)
4173.936	J	2	0.99	3.94	2-1	
4237.085	M	(2)	0.95	3.87	3-3	
4218.13	P		0.99	3.91	2-2	
4203.570	V	(1)	1.01	3.94	1-1	
4283.87	P	⊙?	0.99	3.87	2-3	
4248.40	P	⊙	1.01	3.91	1-2	
3820.428	I	250R	0.86	4.09	5-4	$a^5F-y^5D^o$
3835.884	B	200R	0.91	4.14	4-3	(20)
3834.225	B	100r	0.95	4.17	3-2	
3840.439	B	80r	0.99	4.20	2-1	
3849.969	B	40	1.01	4.21	1-0	
3887.051	B	15	0.91	4.09	4-4	
3878.021	B	60	0.95	4.14	3-3	
3873.504	B	60	0.99	4.17	2-2	
3865.526	B	30	1.01	4.20	1-1	
3940.883	B	5	0.95	4.09	3-4	
3917.185	B	8	0.99	4.14	2-3	
3898.012	K	10	1.01	4.17	1-2	
3734.867	B	300r	0.86	4.16	5-5	$a^5F-y^5F^o$
3749.487	B	200R	0.91	4.20	4-4	(21)
3758.235	B	150R	0.95	4.24	3-3	
3763.790	B	100r	0.99	4.26	2-2	
3767.194	B	80r	1.01	4.28	1-1	
3687.458	B	40r	0.86	4.20	5-4	
3709.246	G	75r	0.91	4.24	4-3	
3727.631	B	50r	0.95	4.26	3-2	
3743.364	G	20	0.99	4.28	2-1	
3798.513	B	40	0.91	4.16	4-5	
3799.549	B	50	0.95	4.20	3-4	
3795.004	B	60	0.99	4.24	2-3	
3787.883	B	50	1.01	4.26	1-2	
3813.964	G	40	0.95	4.19	3-2	$a^5F-z^3P^o$
3790.095	B	12	0.99	4.24	2-1	(22)
3786.678	J	8	1.01	4.27	1-0	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3850.820	B	12	0.99	4.19	2-2	$a^5F-z^3P^o$
3814.526	J	5	1.01	4.24	1-1	cont
3876.043	J	4	1.01	4.19	1-2	
3581.195//	B	250R	0.86	4.30	5-6	$a^5F-z^5G^o$
3647.844	B	100R	0.91	4.29	4-5	(23)
3631.464	B	125R	0.95	4.35	3-4	
3618.769	B	125R	0.99	4.40	2-3	
3608.861	B	100r	1.01	4.43	1-2	
3589.107	B	8	0.86	4.29	5-5	
3585.708	J	20	0.91	4.35	4-4	
3585.320	B	30	0.95	4.40	3-3	
3586.985	G	30	0.99	4.43	2-2	
3528.94	P		0.86	4.35	5-4	
3540.709	J	3	0.91	4.40	4-3	
3554.122	J	4	0.95	4.43	3-2	
3513.820	B	30	0.86	4.37	5-5	$a^5F-z^3G^o$
3521.264	B	25	0.91	4.42	4-4	(24)
3526.167	J	15	0.95	4.45	3-3	
3466.501	V	3	0.86	4.42	5-4	
3483.006	G	3	0.91	4.45	4-3	
3570.100	G	100R	0.91	4.37	4-5	
3565.381	B	60r	0.95	4.42	3-4	
3558.518	B	30	0.99	4.45	2-3	
3359.496	V	2	0.86	4.53	5-4	$a^5F-y^3F^o$
3356.332	V	1	0.91	4.59	4-3	(25)
3355.517	V	(1)	0.95	4.63	3-2	
3410.905	V	(1)	0.91	4.53	4-4	
3396.386	V	(1)	0.95	4.59	3-3	
3384.80	P	⊙?	0.99	4.63	2-2	
3452.273	G	10	0.95	4.53	3-4	
*3436.383	J	5	0.99	4.59	2-3	
*3404.301	V	3	1.01	4.63	1-2	
3401.521	A	6	0.91	4.54	4-3	$a^5F-y^5P^o$
3396.978	A	4	0.95	4.59	3-2	(26)
3397.642	V	2	0.99	4.62	2-1	
3442.672	J	3	0.95	4.54	3-3	
3427.002	J	2	0.99	4.59	2-2	
3417.273	J	(1gn)	1.01	4.62	1-1	
3473.497	V	(1)	0.99	4.54	2-3	
3446.947	U	(1)	1.01	4.59	1-2	
3245.984	V	(2)	0.91	4.71	4-3	$a^5F-y^3D^o$
3230.09	P	⊙	0.95	4.77	3-2	(27)
3223.853	V	(1)	0.99	4.81	2-1	
3283.430	V	(1)	0.95	4.71	3-3	
*3257.244	V	2	0.99	4.77	2-2	
3241.50	P	(1)	1.01	4.81	1-1	
3311.451	V	(1)	0.99	4.71	2-3	
3275.24	P		1.01	4.77	1-2	
3057.446	A	40R	0.86	4.89	5-4	$a^5F-x^5D^o$
3067.244	A	30r	0.91	4.93	4-3	(28)
3075.721	A	25r	0.95	4.97	3-2	
3083.742	A	20	0.99	4.99	2-1	
3091.578	A	20	1.01	5.00	1-0	
3099.968	V	15	0.91	4.89	4-4	
3100.666	G	20	0.95	4.93	3-3	
3100.304	G	20	0.99	4.97	2-2	
3099.898	V	20	1.01	4.99	1-1	
3134.111	A	10	0.95	4.89	3-4	
*3125.653	C	15	0.99	4.93	2-3	
*3116.633§	A	12	1.01	4.97	1-2	
*2984.785§	V	10	0.86	4.99	5-4	$a^5F-y^7P^o$
3045.077	G	5	0.91	4.96	4-3	(29)
3092.785	V	2	0.95	4.94	3-2	
3025.283	V	3	0.91	4.99	4-4	
3078.014	G	4	0.95	4.96	3-3	
3117.63	W	1	0.99	4.94	2-2	
3057.80	P	⊙	0.95	4.99	3-4	
3102.64	P	⊙	0.99	4.96	2-3	
m3134.15	P	Fe	1.01	4.94	1-2	
2999.512	A	30R	0.86	4.97	5-5	$a^5F-x^5F^o$
3009.570	C	25r	0.91	5.01	4-4	(30)
3018.983	G	15r	0.95	5.04	3-3	
3026.462	G	15	0.99	5.06	2-2	
3031.638	G	15	1.01	5.08	1-1	
2969.474	G	10	0.86	5.01	5-4	
2987.292	A	10	0.91	5.04	4-3	
3003.031	C	10	0.95	5.06	3-2	
3016.186	G	12	0.99	5.08	2-1	
3040.428	C	15	0.91	4.97	4-5	
3041.745	V	15	0.95	5.01	3-4	
3042.666	G	15	0.99	5.04	2-3	
3042.020	G	15	1.01	5.06	1-2	
3014.176	V	3	0.95	5.05	3-2	$a^5F-z^5S^o$
3037.782	V	2	0.99	5.05	2-2	(31)
*3053.443	U	(2)	1.01	5.05	1-2	
8916.26	F	1	1.60	2.99	2-3	$a^3F-z^7P^o$
						(32)
7180.020	V	1	1.48	3.20	4-4	$a^3F-z^5D^o$
7494.72	P	⊙	1.55	3.20	3-4	(33)
6710.31	V	2	1.48	3.32	4-5	$a^3F-z^5F^o$
6844.67	P	1	1.55	3.35	3-4	(34)
6929.96	P		1.60	3.38	2-3	
6581.22	V	2	1.48	3.35	4-4	
6739.54	V	1	1.55	3.38	3-3	
6851.64	P	1	1.60	3.40	2-2	
6483.95	P	⊙	1.48	3.38	4-3	
6665.43	P	⊙	1.55	3.40	3-2	
6801.87	P	⊙	1.60	3.42	2-1	
5853.18	V	(1)	1.48	3.59	4-3	$a^3F-z^5P^o$
						(35)
5171.599	B	20	1.48	3.86	4-4	$a^3F-z^3F^o$
5194.943	I	10	1.55	3.93	3-3	(36)
5216.278	B	10	1.60	3.97	2-2	
5041.759	B	10	1.48	3.93	4-3	
5107.645	J	8	1.55	3.97	3-2	
5332.903	J	4	1.55	3.86	3-4	
5307.365	B	2	1.60	3.93	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5167.491	B	40	1.48	3.87	4-3	a^3F-z^3D^o (37)
5227.192	B	40	1.55	3.91	3-2	
5270.360	B	30	1.60	3.94	2-1	
5328.534	B	15	1.55	3.87	3-3	
5341.026	B	20	1.60	3.91	2-2	
m5446.87	P	Fe	1.60	3.87	2-3	
4733.596	B	4	1.48	4.09	4-4	a^3F-y^5D^o (38)
*4772.817	B	3	1.55	4.14	3-3	
4798.736	V	(1)	1.60	4.17	2-2	
4643.20	P	⊙	1.48	4.14	4-3	
4868.38	P	⊙	1.55	4.09	3-4	
4867.53	P	⊙	1.60	4.14	2-3	
4602.944	B	9	1.48	4.16	4-5	a^3F-y^5F^o (39)
4654.501	J	5	1.55	4.20	3-4	
4680.297	J	(2)	1.60	4.24	2-3	
4531.152	B	8	1.48	4.20	4-4	
4592.655	B	5	1.55	4.24	3-3	
4632.915	J	2	1.60	4.26	2-2	
4472.52	P	⊙	1.48	4.24	4-3	
4547.022	J	(2)	1.55	4.26	3-2	
4602.005	J	(2)	1.60	4.28	2-1	
4674.65	P	⊙	1.55	4.19	3-2	a^3F-z^3D^o (40)
4672.83	P	⊙	1.60	4.24	2-1	
4765.485	V	(1)	1.60	4.19	2-2	
4383.547	B	45r	1.48	4.29	4-5	a^3F-z^5G^o (41)
4404.752	B	30	1.55	4.35	3-4	
4415.125	B	20	1.60	4.40	2-3	
4294.128	B	15	1.48	4.35	4-4	
4337.049	B	10	1.55	4.40	3-3	
4367.906	J	2	1.60	4.43	2-2	
4289.760	J	(1)	1.48	4.40	4-3	
*4291.466	I	4	1.55	4.43	3-2	
4271.764	B	35	1.48	4.37	4-5	a^3F-z^3G^o (43)
4307.906	B	35	1.55	4.42	3-4	
4325.765	B	35	1.60	4.45	2-3	
4203.031	B	30	1.48	4.42	4-4	
4250.790	B	25	1.55	4.45	3-3	
4147.673	B	10	1.48	4.45	4-3	
4045.815	B	60r	1.48	4.53	4-4	a^3F-y^3F^o (43)
4063.597	H	45	1.55	4.59	3-3	
4071.740	H	40	1.60	4.63	2-2	
3969.261	B	30	1.48	4.59	4-3	
4005.246	B	25	1.55	4.63	3-2	
4143.871	B	30	1.55	4.53	3-4	
4132.060	B	25	1.60	4.59	2-3	
4032.636	V	4	1.48	4.54	4-3	a^3F-y^5P^o (44)
4064.46	W	(2)	1.55	4.59	3-2	
4090.34	P	⊙	1.60	4.62	2-1	
*4130.035	U	(1)	1.55	4.54	3-3	
m4132.94	P	Fe	1.60	4.59	2-2	
4200.78	P	⊙	1.60	4.54	2-3	
3815.842	B	100r	1.48	4.71	4-3	a^3F-y^3D^o (45)
3827.825	B	75r	1.55	4.77	3-2	
3841.051	B	80r	1.60	4.81	2-1	
3902.948	B	20	1.55	4.71	3-3	
3888.517	B	20	1.60	4.77	2-2	
3966.066	B	10	1.60	4.71	2-3	
3615.66	W	(1)	1.48	4.89	4-4	a^3F-x^5D^o (46)
3647.427	J	3	1.55	4.93	3-3	
3666.944	U	(1)	1.60	4.97	2-2	
3571.228	V	2	1.48	4.93	4-3	
*3613.940	J	1	1.55	4.97	3-2	
3643.82	P	(1)	1.60	4.99	2-1	
3693.78	P	⊙	1.55	4.89	3-4	
*3702.500	J	1	1.60	4.93	2-3	
3514.48	P	⊙	1.48	4.99	4-4	a^3F-y^7P^o (47)
3541.22	P	⊙	1.48	4.96	4-3	
3636.50	P	⊙	1.55	4.94	3-2	
3588.23	P	⊙	1.55	4.99	3-4	
3670.23	P	⊙	1.60	4.96	2-3	
*3534.914	U	(1)	1.48	4.97	4-5	a^3F-x^5F^o (48)
3493.89	W	(1)	1.48	5.01	4-4	
*3534.914	U	(1)	1.55	5.04	3-3	
3564.11	W	(1)	1.60	5.06	2-2	
3463.305	V	2	1.48	5.04	4-3	
3513.065	U	(1)	1.55	5.06	3-2	
3549.868	J	4	1.60	5.08	2-1	
3871.693	V	(2)	1.48	5.25	4-3	a^3F-x^5P^o (49)
3899.511	V	(1)	1.55	5.29	3-2	
3335.513	V	(1)	1.55	5.25	3-3	
3231.599	V	(1)	1.48	5.30	4-5	a^3F-y^5G^o (50)
3281.83	P		1.55	5.31	3-4	
3313.733	V	(1)	1.60	5.33	2-3	
3283.273	V	(1)	1.48	5.31	4-5	a^3F-z^5H^o (51)
3272.60	P	⊙	1.55	5.32	3-4	
3293.146	V	(1)	1.60	5.35	2-3	
3171.353	V	5	1.48	5.37	4-4	a^3F-w^5D^o (52)
3187.68	P		1.55	5.42	3-3	
3202.66	P	⊙	1.60	5.45	2-2	
3129.334	V	5	1.48	5.42	4-3	
3181.370	V	4	1.55	5.45	3-2	
3179.479§	U	(1)	1.60	5.48	2-1	
3068.927	S	(-)	1.48	5.50	4-3	a^3F-v^5D^o (53)
3138.40	P	⊙	1.55	5.48	3-4	
3081.83	P	⊙	1.48	5.48	4-4	
3125.03	P	⊙	1.55	5.50	3-3	
3154.11	P	⊙	1.60	5.51	2-2	
3128.901	U	1	1.55	5.49	3-2	a^3F-y^5S^o (54)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3007.146	V	8	1.48	5.58	4-3	a^3F-x^3D^o (55)
3055.263	C	12	1.55	5.59	3-2	
3068.175	G	8	1.60	5.62	2-1	
3060.984	G	4	1.55	5.58	3-3	
3093.806	V	3	1.60	5.59	2-2	
3000.452	G	8	1.48	5.59	4-5	a^3F-y^3G^o (56)
3041.639	V	10	1.55	5.61	3-4	
3067.123	V	8	1.60	5.62	2-3	
2988.468	G	2	1.48	5.61	4-4	
3029.237	V	3	1.55	5.62	3-3	
2976.50	P	(1)	1.48	5.62	4-3	
2962.11	W	(2)	1.48	5.64	4-5	a^3F-x^5G^o (57)
3004.62	W	(1)	1.55	5.66	3-4	
3034.51	W	(2n)	1.60	5.67	2-3†	
11973.01	D	8	2.17	3.20	3-4	a^5P-z^5D^o (58)
11882.80	D	7	2.19	3.23	2-3	
11884.12	D	3	2.21	3.25	1-2	
11638.25	D	7	2.17	3.23	3-3	
11607.57	D	12	2.19	3.25	2-2	
11689.98	D	8	2.21	3.27	1-1	
11374.02	D	3	2.17	3.25	3-2	
11423.30	D	6	2.19	3.27	2-1	
11593.55	D	5	2.21	3.28	1-0	
10395.75	F	8	2.17	3.35	3-4	a^5P-z^5F^o (59)
10340.77	F	4	2.19	3.38	2-3	
10379.01	P	⊙	2.21	3.40	1-2	
10155.18	P	⊙	2.17	3.38	3-3	
10167.4	F	1	2.19	3.40	2-2	
10265.23	P	⊙	2.21	3.43	1-1	
9987.88	P		2.17	3.40	3-2	
10058.28	P	⊙	2.19	3.43	2-1	
8688.633	E	1500	2.17	3.59	3-3	a^5P-z^5P^o (60)
8514.075	E	150	2.19	3.64	2-2	
8468.413	E	300	2.21	3.67	1-1	
8387.781	E	1200	2.17	3.64	3-2	
8327.063	E	1200	2.19	3.67	2-1	
8824.227	E	250	2.19	3.59	2-3	
8661.908	E	600	2.21	3.64	1-2	
7367.00	P	⊙	2.17	3.86	3-4	a^5P-z^3F^o (61)
7101.28	P	⊙	2.19	3.93	2-3	
7037.04	P	⊙†	2.21	3.97	1-2	
6430.851	B	300	2.17	4.09	3-4	a^5P-y^5D^o (62)
6335.335	B	10	2.19	4.14	2-3	
6297.800	I	5	2.21	4.17	1-2	
6265.140	B	6	2.17	4.14	3-3	
6219.290	I	6	2.19	4.17	2-2	
6213.438	I	5	2.21	4.20	1-1	
6151.624	L	(2)	2.17	4.17	3-2	
6136.999	J	(2)	2.19	4.20	2-1	
6173.343	J	3	2.21	4.21	1-0	
6062.89	V	(1)	2.17	4.20	3-4	a^5P-y^5F^o (63)
*6021.82	W	(2n)	2.19	4.24	2-3	
6015.25	P	⊙	2.21	4.26	1-2	
5958.34	P	⊙	2.17	4.24	3-3	
5943.58	P	⊙	2.19	4.26	2-2	
5963.25	V	(1)	2.21	4.28	1-1	
5881.76	P	⊙	2.17	4.26	3-2	
5892.80	P		2.19	4.28	2-1	
6097.08	P	⊙	2.17	4.19	3-2	a^5P-z^3P^o (64)
6009.45	P		2.19	4.24	2-1	
m6012.21	P	Ni	2.21	4.27	1-0	
6163.560	V	(1)	2.19	4.19	2-2	
6082.718	V	(1)	2.21	4.24	1-1	
6240.656	I	(2)	2.21	4.19	1-2	
m5224.30	P	Ti	2.17	4.53	3-4	a^5P-y^3F^o (65)
5143.73	P	⊙	2.19	4.59	2-3	
5102.24	P		2.21	4.63	1-2	
5202.339	B	8	2.17	4.54	3-3	a^5P-y^5P^o (66)
5145.105	T	(-)	2.19	4.59	2-2	
5131.475	J	(2)	2.21	4.62	1-1	
5098.703	J	8	2.17	4.59	3-2	
5079.226	J	6	2.19	4.62	2-1	
5250.650	B	6	2.19	4.54	2-3	
5198.714	B	4	2.21	4.59	1-2	
4847.09	P		2.17	4.71	3-3	a^5P-y^3D^o (67)
4771.702	J	(1)	2.19	4.77	2-2	
4745.129	U	(1)	2.21	4.81	1-1	
4731.77	P		2.17	4.77	3-2	
4700.42	P	⊙	2.19	4.81	2-1	
*4889.009	U	(1)	2.19	4.71	2-3	
4817.773	U	(1)	2.21	4.77	1-2	
4528.619	B	18	2.17	4.89	3-4	a^5P-x^5D^o (68)
4494.568	B	12	2.19	4.93	2-3	
4482.257	J	6	2.21	4.97	1-2	
4459.121	B	10	2.17	4.93	3-3	
4443.343	B	12	2.19	4.97	2-2	
4447.732	B	9	2.21	4.99	1-1	
4407.714	J	5	2.17	4.97	3-2	
4408.419	B	6	2.19	4.99	2-1	
4430.618	B	6	2.21	5.00	1-0	
4371.00	P		2.17	4.99	3-4	a^5P-y^7P^o (69)
4447.134	J	(2)Mn†	2.19	4.96	2-3	
4518.58	P	⊙	2.21	4.94	1-2	
4412.43	P	⊙	2.17	4.96	3-3	
4478.040	U	(1)	2.19	4.94	2-2	
4442.835	J	(2)	2.17	4.94	3-2	
4338.260	J	(2)	2.17	5.01	3-4	a^5P-x^5F^o (70)
4324.961	V	(1)	2.19	5.04	2-3	
4329.54	P	⊙	2.21	5.06	1-2	
4292.13	P	⊙	2.17	5.04	3-3	
4292.293	V	(1)	2.19	5.06	2-2	
4308.54	P		2.21	5.08	1-1	
m4259.95	P	Fe	2.17	5.06	3-2	
4271.65	P	⊙	2.19	5.08	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4282.406	B	12	2.17	5.05	3-2	a^5P-z^5S^o (71)
4315.087	B	10	2.19	5.05	2-2	
4352.737	B	9	2.21	5.05	1-2	
4001.666	J	5	2.17	5.25	3-3	a^5P-x^5P^o (72)
3977.743	I	12	2.19	5.29	2-2	
3974.766	V	(1)	2.21	5.32	1-1	
3949.954	I	10	2.17	5.29	3-2	
3943.339	J	2	2.19	5.32	2-1	
4030.194	V	(3)	2.19	5.25	2-3	
4009.714	I	10	2.21	5.29	1-2	
3852.574	I	6	2.17	5.37	3-4	a^5P-w^5D^o (73)
3816.340	J	4	2.19	5.42	2-3	
3807.534	G	7	2.21	5.45	1-2	
*3790.756	J	1	2.17	5.42	3-3	
3778.697	J	(1)	2.19	5.45	2-2	
3774.833	G	5	2.21	5.48	1-1	
3753.610	G	8	2.17	5.45	3-2	
3746.486	J	1	2.19	5.48	2-1	
3768.030	J	3	2.21	5.49	1-0	
3776.454	G	6	2.17	5.43	3-4	a^5P-w^5F^o (74)
3781.188	J	(1)	2.19	5.45	2-3	
3792.834	V	1	2.21	5.47	1-2	
3756.069	J	1	2.17	5.45	3-3	
3764.21	P	⊙	2.19	5.47	2-2	
3779.486	J	2	2.21	5.48	1-1	
3739.317	V	1	2.17	5.47	3-2	
3751.09	P	⊙	2.19	5.48	2-1	
*3721.278	V	2	2.17	5.48	3-4	a^5P-v^5D^o (75)
m3726.89	P	Fe	2.19	5.50	2-3	
3739.120	J	1	2.21	5.51	1-2	
*3702.500	J	1	2.17	5.50	3-3	
3711.30	P		2.19	5.51	2-2	
3725.65	P		2.21	5.53	1-1	
3687.100	J	2	2.17	5.51	3-2	
3698.03	P	⊙	2.19	5.53	2-1	
3707.918	G	8	2.17	5.49	3-2	a^5P-y^5S^o (76)
3732.399	B	10	2.19	5.49	2-2	
3760.534	G	6	2.21	5.49	1-2	
*3612.940	J	1	2.17	5.58	3-3	a^5P-x^3D^o (77)
3628.094	V	1	2.19	5.59	2-2	
3618.96	P		2.21	5.62	1-1	
3604.96	P		2.17	5.59	3-2	
3592.881	U	(1)	2.19	5.62	2-1	
*3636.186	V	2	2.19	5.58	2-3	
3654.66	W	(1)	2.21	5.59	1-2	
3497.110	J	10	2.17	5.70	3-3	a^5P-w^5P^o (78)
3497.15	P	(1)	2.19	5.72	2-2	
3509.870	U	(1)	2.21	5.73	1-1	
3475.651	J	6	2.17	5.73	3-2	
3485.342	A	7	2.19	5.73	2-1	
3518.86	W	(2)	2.19	5.70	2-3	
3521.833	J	2	2.21	5.73	1-2	
3462.353	J	2	2.19	5.75	2-1	a^5P-z^3S^o (79)
3486.556	U	(1)	2.21	5.75	1-1	
3427.121	A	20	2.17	5.77	3-4	a^5P-w^5D^o (81)
3445.151	A	20	2.19	5.77	2-3	
3451.915	G	10	2.21	5.79	1-2	
3424.284	G	10	2.17	5.77	3-3	
3428.192	G	8	2.19	5.79	2-2	
3417.842	G	12	2.21	5.82	1-1	
3407.53	P	⊙	2.17	5.79	3-2	
3394.583	G	5	2.19	5.82	2-1	
*3426.383	J	5d	2.17	5.77	3-2	a^5P-y^3P^o (82)
3426.637	J	5	2.19	5.79	2-1	
3477.850	V	(2)	2.21	5.76	1-0	
3447.278	G	8	2.19	5.77	2-2	
3450.328	G	10	2.21	5.79	1-1	
3471.27	V	5	2.21	5.77	1-2	
3407.461	A	20d	2.17	5.79	3-4	a^5P-x^3F^o (83)
3404.357	G	6	2.19	5.81	2-3	
3415.530	G	4	2.21	5.83	1-2	
3383.981	C	8	2.17	5.81	3-3	
3392.304	G	8	2.19	5.83	2-2	
3372.070	G	3	2.17	5.83	3-2	
3382.403	G	3	2.17	5.82	3-4	a^5P-z^3H^o (84)
3392.652	G	15	2.17	5.80	3-3	a^5P-w^3D^o (85)
3399.336	A	15	2.19	5.82	2-2	
3406.803	J	6	2.21	5.84	1-1	
3379.017	G	6	2.17	5.82	3-2	
*3383.692	G	5	2.19	5.84	2-1	
3413.135	A	15	2.19	5.80	2-3	
3422.656	G	7	2.21	5.82	1-2	
3327.961	V	(1)	2.17	5.87	3-4	a^5P-w^5G^o (86)
3346.942	V	1	2.17	5.85	3-2	a^5P-1^o (87)
3366.870	V	5	2.19	5.85	2-2	
3389.748	V	2	2.21	5.85	1-2	
3343.243	V	(1)	2.17	5.86	3-4	a^5P-z^1G^o (88)
3351.529	V	2	2.19	5.87	2-1	a^5P-y^3S^o (89)
3374.221	V	(1)	2.21	5.87	1-1	
3286.755	A	20	2.17	5.92	3-3	a^5P-y^5P^o (91)
3284.588	A	5	2.19	5.95	2-2	
3292.590	G	8	2.21	5.96	1-1	
3265.616	G	15	2.17	5.95	3-2	
3271.002	A	15	2.19	5.96	2-1	
3305.971	C	20	2.19	5.92	2-3	
3309.356	C	20	2.21	5.95	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3290.722	V	(2)	2.17	5.92	3-4	a^5P-v^5P^o (90)
3288.973	V	2	2.19	5.94	2-3	
3298.133	A	6	2.21	5.96	1-2	
3269.964	V	(1)	2.17	5.94	3-3	
3276.477	V	4	2.19	5.96	2-2	
3286.026	V	2	2.21	5.97	1-1	
3257.594	A	8	2.17	5.96	3-2	
3264.522	V	5	2.19	5.97	2-1	
3251.236	G	8	2.19	5.98	2-3	a^5P-w^3G^o (93)
3250.634	V	4	2.17	5.96	3-2	a^5P-x^3P^o (95)
3246.973	V	6	2.19	5.99	2-1	
3274.24	P	⊙	2.21	5.98	1-0	
3269.42	P	⊙	2.19	5.96	2-2	
3268.234	G	5	2.21	5.99	1-1	
3290.988	G	5	2.21	5.96	1-2	
3209.115	V	(1)	2.17	6.01	3-4	a^5P-y^1G^o (97)
*3211.872	V	4	2.21	6.06	1-2	a^5P-z^3P^o (98)
3167.78	P	⊙	2.17	6.06	3-4	a^5P-w^3F^o (99)
*3172.067	V	2	2.19	6.08	2-3	
*3153.064	S	(-)	2.19	6.10	2-2	
3165.16	P	⊙	2.17	6.07	3-3	a^5P-v^3D^o (100)
m3172.11	P	Fe	2.19	6.08	2-2	
3186.82	P		2.21	6.09	1-1	
3154.41	P	(1)	2.17	6.08	3-2	
3166.59	P	⊙	2.19	6.09	2-1	
3182.970	G	3	2.19	6.07	2-3	
*3192.417	U	(1)	2.21	6.08	1-2	
3173.663	V	(3r)	2.19	6.08	2-3	a^5P-z^3P^o (101)
3063.149	S	(1)	2.17	6.20	3-2	a^5P-w^3P^o (102)
3093.53	P		2.19	6.18	2-1	
3121.76	W	(1)	2.21	6.17	1-0	
3079.84	P	⊙	2.19	6.20	2-2	
3023.583	S	(-)	2.17	6.25	3-4	a^5P-x^1G^o (103)
2981.852	G	6	2.17	6.31	3-4	a^5P-t^5D^o †
2972.277	G	3	2.19	6.34	2-3	(104)
2966.26	U	(2)	2.21	6.37	1-2	
3004.48	P	⊙	2.21	6.32	1-2	a^5P-v^3F^o† (105)
9362.370	E	4	2.27	3.59	2-3	a^3P-z^5P^o (106)
10081.40	P	⊙	2.41	3.64	1-2	
10311.88	P	⊙	2.47	3.67	0-1	
9013.90	F	1	2.27	3.64	2-2	
9820.24	P		2.41	3.67	1-1	
8804.624	E	10	2.27	3.67	2-1	
m7445.70	P	Fe	2.27	3.93	2-3	a^3P-z^3F^o
m7945.98	P	Fe	2.41	3.97	1-2	(107)
7723.20	O	4	2.27	3.87	2-3	a^3P-z^3D^o
8239.130	E	8	2.41	3.91	1-2	(108)
8401.42	O	2	2.47	3.94	0-1	
7512.12	P	⊙	2.27	3.91	2-2	
8072.16	P	⊙	2.41	3.94	1-1	
7373.07	P	⊙	2.27	3.94	2-1	
6608.03	V	2	2.27	4.14	2-3	a^3P-y^5D^o
7016.075	V	20	2.41	4.17	1-2	(109)
7151.495	V	1	2.47	4.20	0-1	
6481.878	I	20	2.27	4.17	2-2	
6911.52	V	1	2.41	4.20	1-1	
6392.534	V	(1)	2.27	4.20	2-1	
6861.93	V	2	2.41	4.21	1-0	
6267.64	P		2.27	4.24	2-3	a^3P-y^5F^o
6667.17	P	⊙?	2.41	4.26	1-2	(110)
6822.05	P	1	2.47	4.28	0-1	
6421.355	B	200	2.27	4.19	2-3	a^3P-z^3P^o
6750.152	I	100	2.41	4.24	1-1	(111)
6254.262	I	6	2.27	4.34	2-1	
6663.446	B	80	2.41	4.27	1-0	
6945.208	I	150	2.41	4.19	1-2	
6978.855	I	100	2.47	4.24	0-1	
5322.049	V	(2)	2.27	4.59	2-3	a^3P-y^3F^o
5563.69	P	⊙	2.41	4.63	1-2	(112)
5222.40	P	⊙	2.27	4.63	2-2	
5436.594	V	(2)	2.27	4.54	2-3	a^3P-y^5P^o
5678.60	P	⊙	2.41	4.59	1-2	(113)
5754.89	P	⊙	2.47	4.62	0-1	
5323.51	P	(1)	2.27	4.59	2-2	
5598.47	P		2.41	4.62	1-1	
5253.03	P	⊙	2.27	4.62	2-1	
5049.825	B	15	2.27	4.71	2-3	a^3P-y^3D^o
m5227.15	P	Fe	2.41	4.77	1-2	(114)
5273.379	J	4	2.47	4.81	0-1	
4924.776	B	3	2.27	4.77	2-2	
5141.750	V	(2)	2.41	4.81	1-1	
4848.898	V	(1)	2.27	4.81	2-1	
4630.125	J	(2)	2.27	4.93	2-3	a^3P-x^5D^o
4834.511	V	(1)	2.41	4.97	1-2	(115)
4908.61	P	⊙	2.47	4.99	0-1	
4574.724	J	(2)	2.27	4.97	2-2	
4794.36	P	⊙	2.41	4.99	1-1	
4538.764	V	(1)	2.27	4.99	2-1	
4439.883	J	(2)	2.27	5.05	2-2	a^3P-z^5S^o (116)
4138.84	U	(1)	2.27	5.25	2-3	a^3P-x^5P^o
4289.29	P		2.41	5.29	1-2	(117)
4338.84	P	⊙	2.47	5.32	0-1	
4083.554	V	(1)	2.27	5.29	2-2	
4249.32	P	⊙	2.41	5.32	1-1	
*4047.315	V	(1)	2.27	5.32	2-1	
4037.725	V	(1)	2.27	5.33	2-3	a^3P-y^5G^o
4235.79	P	⊙	2.41	5.33	1-2	(118)
4007.333	V	(1gn)	2.27	5.35	2-3	a^3P-z^5H^o (119)
3913.635	J	4	2.27	5.42	2-3	a^3P-w^5D^o
4058.766	V	3	2.41	5.45	1-2	(120)
4101.684	V	(1)	2.47	5.48	0-1	
3874.053	V	(1)	2.27	5.45	2-2	
*4031.632	V	(1)	2.41	5.48	1-1	
3840.20	P	⊙	2.27	5.48	2-1	
4013.89	P		2.41	5.49	1-0	
3876.671	U	(1)	2.27	5.45	2-3	a^3P-w^5P^o (121)
3819.62	P		2.27	5.50	2-3	a^3P-v^5P^o
3981.106	V	(1)	2.41	5.51	1-2	(122)
4043.69	P	⊙	2.47	5.53	0-1	
3803.24	P	⊙	2.27	5.51	2-2	
3965.83	P	⊙	2.41	5.53	1-1	
3825.404	J	(1gn)	2.27	5.49	2-2	a^3P-y^5S^o
4005.38	P	⊙	2.41	5.49	1-2	(123)
3724.380	B	8	2.27	5.58	2-3	a^3P-x^3D^o
3885.513	I	5	2.41	5.59	1-2	(124)
3918.319	J	3	2.47	5.62	0-1	
3715.911	G	4	2.27	5.59	2-2	
3845.170	K	(5)	2.41	5.62	1-1	
3678.98	W	(1)	2.27	5.62	2-1	
3677.477	V	(2)	2.27	5.62	2-3	a^3P-y^3G^o (125)
3630.67	P	⊙?	2.27	5.67	2-3	a^3P-x^5G^o (126)
3601.42	P	⊙	2.27	5.70	2-3	a^3P-w^5P^o
3735.71	P	⊙	2.41	5.72	1-2	(127)
*3790.756	J	1	2.47	5.73	0-1	
m3578.67	P	Cr	2.27	5.72	2-2	
3722.24	P	⊙	2.41	5.73	1-1	
3566.31	P	⊙	2.27	5.73	2-1	
3542.243	V	1	2.27	5.75	2-1	a^3P-z^3S^o
3696.03	W	(1)	2.41	5.75	1-1	(128)
3763.57	P	⊙	2.47	5.75	0-1	
3524.236	G	4	2.27	5.77	2-3	a^3P-u^5D^o
3657.143	V	1	2.41	5.79	1-2	(130)
*3683.616	V	(1)	2.47	5.83	0-1	
3506.498	G	6	2.27	5.79	2-2	
3618.91	P	⊙	2.41	5.82	1-1	
3471.350	U	6	2.27	5.82	2-1	
3619.66	P	⊙	2.41	5.82	1-0	
3526.465	J	4	2.27	5.77	2-2	a^3P-y^3P^o
3655.35	P	⊙	2.41	5.79	1-1	(131)
3504.866	V	2	2.27	5.79	2-1	
3686.260	J	2	2.41	5.76	1-0	
3678.863	J	3	2.41	5.77	1-2	
3721.396	V	1	2.47	5.79	0-1	
3481.558	V	(1)	2.27	5.81	2-3	a^3P-x^3F^o
3616.326	U	(1)	2.41	5.83	1-2	(132)
m3490.74	P	Co	2.27	5.80	2-3	a^3P-w^3D^o
3624.30	W	(1)	2.41	5.82	1-2	(133)
3670.810	V	1	2.47	5.84	0-1	
*3476.336	V	(2w)	2.27	5.82	2-2	
3606.53	P	⊙	2.41	5.84	1-1	
m3459.95	P	Fe	2.27	5.84	2-1	
3442.364	V	5	2.27	5.85	2-2	a^3P-1^o
3587.424	J	2	2.41	5.85	1-2	(134)
3426.337	U	(2)	2.27	5.87	2-1	a^3P-y^3S^o
3569.99	W	(1)	2.41	5.87	1-1	(135)
3632.979	J	3	2.47	5.87	0-1	
3393.915	V	(1)	2.27	5.91	2-3	a^3P-x^3G^o (136)
m3378.73	P	Fe	2.27	5.92	2-3	a^3P-v^5P^o
3494.15	W	(1)	2.41	5.95	1-2	(137)
3538.55	W	(1)	2.47	5.96	0-1	
3356.407	H	3	2.27	5.95	2-2	
3478.788	V	(1)	2.41	5.96	1-1	
3342.225	V	5	2.27	5.96	2-1	
3347.927	A	6	2.27	5.96	2-2	a^3P-v^5F^o
3484.97	W	(1)	2.41	5.96	1-2	(138)
3340.566	A	6	2.27	5.96	2-2	a^3P-x^3P^o
3451.628	J	2	2.41	5.99	1-1	(139)
3317.121	G	3	2.27	5.99	2-1	
3458.304	J	4	2.41	5.98	1-0	
3477.007	V	(1)	2.41	5.96	1-2	
3510.443	V	(2)	2.47	5.99	0-1	
3388.81	P	(1)	2.41	6.06	1-2	a^3P-2^o (140)
*3239.029	V	(1)	2.27	6.08	2-3	a^3P-w^3F^o
3345.679	V	(1)	2.41	6.10	1-2	(141)
*3250.400	V	(2)	2.27	6.07	2-3	a^3P-v^3D^o
3367.161	V	(1)	2.41	6.08	1-2	(142)
3416.688	V	(1)	2.47	6.09	0-1	
*3239.089	V	(1)	2.27	6.08	2-2	
3360.935	V	(1)	2.41	6.09	1-1	
3233.304	V	(1)	2.27	6.09	2-1?	
3214.624	V	(1)	2.27	6.11	2-2	a^3P-z^1D^o (143)
3142.888	V	5	2.27	6.20	2-2	a^3P-w^3P^o
*3278.741	V	4	2.41	6.18	1-1	(144)
3157.15	P	⊙	2.27	6.18	2-1	
3288.660	V	(2)	2.41	6.17	1-0	
3263.378	V	(2)	2.41	6.20	1-2	
3331.778	V	(2)	2.47	6.18	0-1	
3030.61	P	⊙	2.27	6.34	2-3	a^3P-v^3F^o (145)
2976.126	G	5	2.27	6.42	2-3	a^3P-u^3D^o †
3053.065	G	5	2.41	6.46	1-2	(146)
3078.436	V	3	2.47	6.48	0-1	
3033.104	V	(1)	2.41	6.48	1-1	
3063.939	V	(2)	2.41	6.44	1-1	a^3P-t^3D^o † (147)
2996.386	G	5	2.41	6.53	1-2	a^3P-v^3P^o †
2960.303	V	1	2.47	6.64	0-1	(148)
10191.51	P	⊙?	2.41	3.63	4-3	z^7D^o-b^3D (149)
5871.04	V	(1)	2.46	4.56	3-2	z^7D^o-d^3F
5908.24	V	(2)	2.47	4.56	1-2	(150)
4360.479	H	35	2.39	5.29	5-5	z^7D^o-e^7D
4235.943	I	25	2.41	5.33	4-4	(152)
4383.219	J	12	2.44	5.36	3-3	
4210.358	J	15	2.47	5.40	1-1	
4198.310	J	30	2.39	5.33	5-4	
4187.808	J	20	2.41	5.36	4-3	
4187.044	J	20	2.44	5.39	3-2	
4191.436	J	15	2.46	5.40	2-1	
4299.242	I	18	2.41	5.29	4-5	
4271.159	J	20	2.44	5.33	3-4	
4250.125	J	25	2.46	5.36	2-3	
4233.608	I	18	2.47	5.39	1-2	
3947.393	V	(1)	2.39	5.52	5-4	z^7D^o-e^5D
3930.645	U	(1)	2.41	5.56	4-3	(153)
3908.68	P	⊙	2.44	5.60	3-2	
3905.66	P	⊙	2.46	5.62	2-1	
3908.90	P		2.47	5.63	1-0	
3980.65	W	(1)	2.41	5.52	4-4	
3950.78	P	⊙	2.44	5.56	3-3	
m3932.59	P	Fe	2.46	5.60	2-2	
3922.08	P	⊙	2.47	5.62	1-1	
4011.71	W	(1)	2.44	5.52	3-4	
3975.31	W	(1)	2.46	5.56	2-3	
3949.23	P	⊙	2.47	5.60	1-2	
3615.01	P	⊙	2.39	5.80	5-5	z^7D^o-e^5F
3594.10	P	⊙	2.41	5.85	4-4	(154)
3570.60	P	⊙	2.44	5.90	3-3	
3554.65	P	⊙	2.46	5.93	2-2	
3544.88	P	⊙	2.47	5.95	1-1	
3225.789	A	25	2.39	6.21	5-6	z^7D^o-e^7F
3196.930	A	20	2.41	6.28	4-5	(155)
3180.223	G	20	2.44	6.32	3-4	
*3200.475	A	15	2.46	6.31	2-3	
3192.799	G	8	2.47	6.34	1-2	
3175.447	A	12	2.39	6.28	5-5	
3160.658	A	10	2.41	6.32	4-4	
*3184.631	V	3	2.44	6.31	3-3	
*3181.932	U	(2)	2.46	6.34	2-2	
3205.400	A	15	2.47	6.32	1-1	
3139.661	U	(1)	2.39	6.32	5-4	
3165.005	V	3	2.41	6.31	4-3	
3166.24	P	⊙	2.44	6.34	3-2	
3194.432	V	3	2.46	6.32	2-1	
3222.069	A	20	2.39	6.22	5-5	z^7D^o-f^7D
3199.530	G	15	2.41	6.27	4-4	(156)
*3214.044	V	20	2.44	6.28	3-3	
3215.940	A	12	2.46	6.30	2-2	
3231.936	V	2	2.47	6.30	1-1	
3178.015	A	10	2.39	6.27	5-4	
3194.03	P		2.41	6.28	4-3	
3199.93	P		2.44	6.30	3-2	
3210.830	G	10	2.46	6.30	2-1	
3244.190	A	15	2.41	6.32	4-5	
3219.581	G	12	2.44	6.27	3-4	
3230.16	P		2.46	6.28	2-3	
3227.067	V	3	2.47	6.30	1-2	
3217.380	A	10	2.39	6.22	5-4	z^7D^o-f^5D
3227.798	G	15	2.41	6.24	4-3	(157)
3230.963	G	10	2.44	6.26	3-2	
3228.262	V	5	2.46	6.28	2-1	
3228.900	G	3	2.47	6.29	1-0	
3239.436	A	15	2.41	6.32	4-4	
3248.206	G	10	2.44	6.34	3-3	
3247.297	V	3	2.46	6.26	2-2	
m3239.46	P	Fe	2.47	6.28	1-1	
3259.991	G	6	2.44	6.22	3-4	
3264.716	V	(2)	2.46	6.24	2-3	
3258.62	P	⊙	2.47	6.26	1-2	
3211.989	G	10	2.39	6.23	5-4	z^7D^o-e^7P
3219.806	G	10	2.41	6.25	4-3	(158)
m3214.07	P	Fe	2.44	6.28	3-2	
3233.967	G	12	2.41	6.23	4-4	
3240.11	P	⊙	2.44	6.25	3-3	
3230.210	V	6	2.46	6.28	2-2	
3254.46	P	⊙	2.44	6.23	3-4	
3256.52	P	⊙	2.46	6.25	2-3	
3241.43	P		2.47	6.28	1-2	
3207.092	V	2	2.39	6.24	5-6	z^7D^o-e^5G
3210.230	G	8	2.41	6.26	4-5	(159)
3201.891	S	(-)	2.44	6.29	3-4	
3193.314	V	8	2.46	6.32	2-3	
3188.819	G	7	2.47	6.34	1-2	
3188.567	G	4	2.39	6.26	5-5	
*3182.076	V	3	2.41	6.29	4-4	
m3177.52	P	Fe+	2.44	6.32	3-3	
m3177.96	P	Fe	2.46	6.34	2-2	
3160.77	P		2.39	6.29	5-4	
3157.992	U	(2)	2.41	6.32	4-3	
*3162.335	U	2n	2.44	6.34	3-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3161.949	G	8	2.39	6.29	5-8	z^7D^o-e^7G
3157.040	A	8	2.41	6.32	4-5	(160)
3165.860	G	4	2.44	6.34	3-4	
3168.86	W	2	2.46	6.35	2-3	
3171.659	V	2	2.47	6.36	1-2	
3136.08	P	⊙	2.39	6.32	5-5	
3146.475	U	(1)	2.41	6.34	4-4	
3153.322	U	(1)	2.44	8.35	3-3	
3160.92	P	⊙	2.46	6.38	2-2	
3188.94	P		2.47	6.37	1-1	
•3125.653	C	15	2.39	6.34	5-4	
m3134.08	P	Fe	2.41	6.35	4-3	
3145.46	P		2.44	6.36	3-2	
3158.21	P		2.46	6.37	2-1	
3148.48	P		2.39	8.31	5-5	z^7D^o-f^5F
3133.96	P	⊙	2.41	8.35	4-4	(181)
3139.10	P	⊙	2.44	8.37	3-3	
3144.488	V	6n	2.46	6.38	2-2	
3150.20	P		2.47	6.39	1-1	
3113.31	P		2.39	8.35	5-4	
3120.03	P		2.41	6.37	4-3	
3129.18	P	(1)	2.44	6.38	3-2	
3139.60	P		2.46	6.39	2-1	
3169.58	P		2.41	8.31	4-5	
3153.200	G	5	2.44	6.35	3-4	
3154.510	V	2	2.46	6.37	2-3	
3155.12	P	(1)	2.47	6.38	1-2	
•3184.831	V	3	2.44	6.31	3-2	z^7D^o-e^5S
•3200.475	A	15	2.46	6.31	2-2	(182)
3211.494	V	4	2.47	6.31	1-2	
3184.308	U	(1)	2.44	6.34	3-4	z^7D^o-g^5D (163)
3123.353	U	(1)	2.41	6.37	4-3	z^7D^o-e^7S
3142.445	V	8	2.44	6.37	3-3	(164)
3157.88	K	8	2.46	6.37	2-3	
3097.49	P	⊙	2.41	6.40	4-3	z^7D^o-e^5P
3094.08	P	⊙	2.44	6.43	3-2	(165)
3113.87	P	⊙	2.46	6.42	2-1	
3116.250	U	(1)	2.44	6.40	3-3?	
3109.05	U	(1)	2.46	6.43	2-2	
3124.08	W	(1)	2.47	6.42	1-1	
8667.37	P	⊙?	2.44	3.87	4-3	a^3H-z^3D^o (168)
6988.530	I	5	2.39	4.18	6-5	a^3H-y^5F^o
•6933.828	L	8	2.42	4.20	5-4	(167)
6875.45	V	1	2.44	4.24	4-3	
7103.15	P	C	2.42	4.16	5-5	
7014.99	O	(1)	2.44	4.20	4-4	
m6469.12	P	Fe	2.39	4.30	6-6	a^3H-z^5G^o
6593.878	I	60	2.42	4.29	5-5	(188)
6462.731	I	30	2.44	4.35	4-4	
6494.985	B	1000	2.39	4.29	6-5	
6393.605	B	400	2.42	4.35	5-4	
6318.022	B	10	2.44	4.40	4-3	
6587.22	P		2.42	4.30	5-6	
6667.42	P	1	2.44	4.29	4-5	
6252.581	B	20	2.39	4.37	6-5	a^3H-z^3G^o
6191.562	B	20	2.42	4.42	5-4	(169)
6136.620	B	20	2.44	4.45	4-3	
6344.154	I	2	2.42	4.37	5-5	
6256.370	I	4	2.44	4.42	4-4	
6412.20	P	⊙?	2.44	4.37	4-5	
5858.27	P	⊙	2.42	4.53	5-4	a^3H-y^3F^o
5753.97	P	⊙	2.44	4.59	4-3	(170)
5916.250	V	(3)	2.44	4.53	4-4	
4315.95	P	⊙	2.42	5.28	5-6	a^3H-y^5G^o
4323.37	P	⊙	2.44	5.30	4-5	(171)
4271.95	P	⊙	2.42	5.31	5-4	
4281.60	P	⊙	2.44	5.33	4-3	
4177.52	P		2.39	5.35	6-6	a^3H-z^5H^o
4277.68	U	(1)	2.42	5.31	5-5	(172)
4235.84	P	⊙	2.39	5.31	6-5	
4258.32	P	⊙	2.42	5.32	5-4	
4247.31	P	⊙	2.44	5.35	4-3	
4218.21	P	⊙	2.42	5.35	5-6	
4082.45	W	(1)	2.39	5.46	6-5	a^3H-w^5F^o
4098.98	P	⊙	2.42	5.43	5-4	(173)
4100.91	P	⊙	2.44	5.45	4-3	
4125.23	P	⊙	2.44	5.43	4-4	
3859.214	I	10	2.39	5.59	6-5	a^3H-y^3G^o
3873.763	B	8	2.42	5.81	5-4	(175)
3878.863	V	(8)	2.44	5.82	4-3	
3893.924	J	(2)	2.42	5.59	5-5	
3899.037	J	2	2.44	5.81	4-4	
3813.07	P	Fe	2.39	5.83	6-8	a^3H-x^5G^o
3798.00	U	(1)	2.39	5.64	6-5	(178)
3813.94	P	⊙	2.42	5.66	5-4	
3838.63	P	⊙	2.44	5.87	4-3	
3846.949	V	(1)	2.42	5.63	5-8	
3780.052	B	8	2.39	5.68	6-7	a^3H-z^3I^o
3785.950	G	8	2.42	5.68	5-6	(177)
3794.340	J	8	2.44	5.70	4-5	
3753.154	J	(1gn)	2.39	5.68	6-8	
3770.405	V	(1)	2.42	5.70	5-5	
3889.02	P	⊙	2.42	5.77	5-4	a^3H-u^5D^o
3708.602	V	(1)	2.44	5.77	4-3	(178)
3711.92	P	⊙	2.44	5.77	4-4	
3868.24	W	1	2.42	5.79	5-4	a^3H-x^3F^o
3881.38	W	(1)	2.44	5.81	4-3	(179)
3888.877	V	(1)	2.44	5.79	4-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3623.187	G	8	2.39	5.80	6-6	a^3H-z^3H^o
3650.280	J	5	2.42	5.80	5-5	(180)
3659.516	G	8	2.44	5.82	4-4	
3619.76	W	(1)	2.39	5.80	6-5	
3637.251	V	1	2.42	5.82	5-4	
3653.763	V	1	2.42	5.80	5-6	
3672.69	W	1	2.44	5.80	4-5	
3573.842	V	3	2.39	5.85	6-6	a^3H-w^5G^o
3596.20	W	1	2.42	5.85	5-5	(181)
3595.87	W	(1)	2.44	5.87	4-4	
3566.59	W	(1)	2.39	5.85	6-5	
3574.37	P		2.42	5.87	5-4	
3582.56	W	(1)	2.44	5.89	4-3	
3603.572	U	(1)	2.42	5.85	5-8	
3817.97	P	⊙	2.44	5.85	4-5	
3543.09	P	⊙	2.39	5.88	6-5	a^3H-v^5F^o
3531.43	W	(1)	2.42	5.92	5-4	(182)
3538.24	P	⊙	2.44	5.94	4-3	
3572.32	P	⊙	2.42	5.88	5-5	
3553.42	U	(1)	2.44	5.92	4-4	
3593.80	P	⊙	2.44	5.88	4-5	
3514.82	W	(1)	2.39	5.91	6-5	a^3H-x^3G^o
3546.21	U	(1)	2.42	5.90	5-4	(183)
3564.58	P	⊙	2.44	5.91	4-3	
3543.39	W	(1)	2.42	5.91	5-5	
3587.36	W	(1)	2.44	5.90	4-4	
3564.51	P	⊙	2.44	5.91	4-5	
3466.279	V	(1)	2.39	5.95	6-5	a^3H-w^3G^o
3478.382	V	(1gn)	2.42	5.97	5-4	(185)
3484.84	W	(1)	2.44	5.98	4-3	
3494.25	P	⊙	2.42	5.95	5-5	
3448.19	P	⊙	2.39	5.97	6-5	a^3H-z^1H^o
•3475.867	V	(1)	2.42	5.97	5-5	(188)
3496.19	U	(1)	2.44	5.97	4-5	
3437.631	V	(1)	2.42	6.01	5-4	a^3H-y^1G^o
3457.512	V	(1)	2.44	6.01	4-4	(187)
3390.25	P	⊙?	2.42	6.06	5-4	a^3H-w^3F^o
3394.085	V	(1)	2.44	6.08	4-3	(188)
3395.90	P	⊙?	2.44	6.08	4-3	a^3H-3° (189)
3327.498	V	(2)	2.39	6.10	6-6	a^3H-y^3H^o
3334.223	V	(3)	2.42	6.12	5-5	(190)
•3339.202	V	2	2.44	6.14	4-4	
3308.75	P	⊙	2.39	6.12	6-5	
3320.650	V	(2)	2.42	6.14	5-4	
3353.268	V	(1)	2.42	6.10	5-6	
3358.929	V	(1)	2.44	6.12	4-5	
3384.541	V	4	2.39	6.11	6-5	a^3H-v^3G^o
3331.816	V	3	2.42	6.13	5-4	(191)
3325.468	V	4	2.44	6.15	4-3	
•3350.284	V	(3)	(2.42	6.11	5-5	
			(2.44	6.13	4-4	
3389.14	P	⊙	2.44	6.11	4-5	
•3225.607	U	(1)	2.42	6.25	5-4	a^3H-x^1G^o
3243.118	V	(1)	2.44	6.25	4-4	(192)
3160.342	V	(2)	2.39	6.30	6-6	a^3H-x^3H^o
3178.970	V	3	2.42	8.30	5-5	(192a)
3155.80	P	⊙	2.39	6.30	6-5	
3183.58	P	⊙	2.42	8.30	5-6	
3155.293	V	2	2.42	6.33	5-4	a^3H-v^3F^o
•3172.067	V	2	2.44	8.33	4-4	(193)
m3125.68	P	Fe	2.39	6.34	6-5	a^3H-u^3G^o
3119.495	G	8	2.42	6.38	5-4	(194)
3130.435	G	6	2.44	6.40	4-3	
3148.420	U	(2)	2.42	6.34	5-5	
3135.863	U	(1)	2.44	6.38	4-4	
3165.08	P	⊙	2.44	6.34	4-5	
3144.92	P	⊙	2.42	6.35	5-4	a^3H-4°
3161.55	P	⊙	2.44	6.35	4-4	(195)
3100.838	V	(2)	2.39	8.37	6-5	a^3H-8° (196a)
•3108.542§	U	(1)	2.44	6.42	4-3	a^3H-u^3D^o (196)
3083.152	U	(1)	2.44	8.45	4-3	a^3H-t^3D^o (197)
3025.638	V	15	2.39	6.47	6-6	a^3H-w^3H^o
3030.149	C	15	2.42	8.50	5-5	(198)
3031.813	G	12	2.44	8.51	4-4	
3009.098	V	3	2.39	6.50	6-5	
3015.913	C	4	2.42	8.51	5-4	
3048.989	V	(1)	2.42	6.47	5-6	
3045.594	V	(1)	2.44	8.50	4-5	
3005.302	G	3	2.39	6.50	6-7	a^3H-y^3I^o
3039.322	V	(2)	2.42	8.48	5-6	(199)
3019.291	V	(1)	2.44	8.53	4-5	
3018.134	U	(1)	2.39	6.48	6-6	
3004.119	V	(2)	2.42	8.53	5-5	
•2986.855§	V	(1)	2.42	6.55	5-6	a^3H-z^1I^o (200)
2980.60	P	⊙	2.44	6.58	4-4	a^3H-9°† (201)
9372.900	E	6	2.55	3.88	4-4	b^3F-z^3F^o
9148.11	F	3	2.58	3.93	3-3	(202)
9010.55	F	2	2.60	3.97	2-2	
9359.420	E	3	2.55	3.87	4-3	b^3F-z^3D^o
9246.54	F	2	2.58	3.91	3-2	(203)
9173.20	P	⊙	2.60	3.94	2-1	
7461.534	V	(1)	2.55	4.20	4-4	b^3F-y^5F^o
7430.58	M	1	2.58	4.24	3-3	(204)
7400.87	P	⊙	2.60	4.26	2-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
7069.54	P	1	2.55	4.29	4-5	b^3F-z^5G^o
6950.82	P		2.58	4.35	3-4	(205)
6860.29	V	1	2.60	4.40	2-3	
6839.828	V	4	2.55	4.35	4-4	
6783.71	V	2	2.58	4.40	3-3	
6746.96	P	⊙	2.60	4.43	2-2	
m6677.98	P	Fe	2.55	4.40	4-3	
6672.88	P		2.58	4.43	3-2	
6783.27	P	⊙	2.55	4.37	4-5	b^3F-z^3G^o
6712.68	P		2.58	4.42	3-4	(206)
6646.98	V	(1)	2.60	4.45	2-3	
6609.116	I	30	2.55	4.42	4-4	
6575.022	I	30	2.58	4.45	3-3	
6475.632	I	12	2.55	4.45	4-3	
6230.728	B	25	2.55	4.53	4-4	b^3F-y^3F^o
6137.696	B	18	2.58	4.59	3-3	(207)
8065.487	B	15	2.60	4.63	2-2	
6051.00	P	⊙	2.55	4.59	4-3	
•6005.53	V	(1)	2.58	4.63	3-2	
6322.693	I	5	2.58	4.53	3-4	
6200.323	J	4	2.60	4.59	2-3	
6199.475	U	(1)	2.55	4.54	4-3	b^3F-y^5P^o
6139.65	P	⊙	2.58	4.59	3-2	(208)
6106.84	P	⊙	2.60	4.62	2-1	
6290.55	P	⊙	2.58	4.54	3-3	
6202.31	P		2.60	4.59	2-2	
6356.293	U	(1)	2.60	4.54	2-3	
5701.553	J	7	2.55	4.71	4-3	b^3F-y^3D^o
5615.308	V	(2)	2.58	4.77	3-2	(209)
5567.401	V	(2)	2.60	4.81	2-1	
5778.47	V	(1)	2.58	4.71	3-3	
5667.67	P		2.60	4.77	2-2	
5833.93	P	⊙	2.60	4.71	2-3	
5265.94	P		2.55	4.89	4-4	b^3F-x^5D^o
•5235.392	V	(2)	2.58	4.93	3-3	(210)
5172.21	P	⊙	2.55	4.93	4-3	
5164.70	P	⊙	2.58	4.97	3-2	
m5162.38	P	Fe	2.60	4.99	2-1	
5331.48	P		2.58	4.89	3-4	
5280.91	P		2.60	4.93	2-3	
5069.60	P	⊙	2.58	5.01	3-4	b^3F-x^5F^o
5010.30	P	⊙	2.55	5.01	4-4	(211)
5008.72	P	⊙	2.58	5.04	3-3	
5003.85	P	⊙	2.60	5.06	2-2	
4566.68	P	⊙	2.55	5.25	4-3	b^3F-x^5P^o (212)
•4488.917	J	(2)	2.55	5.30	4-5	b^3F-y^5G^o
4513.72	P	⊙	2.58	5.31	3-4	(213)
4509.13	P	⊙	2.60	5.33	2-2	
•4373.563	J	(2)	2.55	5.37	4-4	b^3F-w^5D^o
4337.52	P		2.58	5.42	3-3	(214)
4319.45	P	⊙	2.60	5.45	2-2	
4294.04	P		2.55	5.42	4-3	
4288.962	V	(1)	2.58	5.45	3-2	
4277.41	P		2.60	5.48	2-1	
4235.65	P	⊙	2.55	5.46	4-5	b^3F-w^5F^o
4318.81	P	⊙	2.58	5.43	3-4	(215)
4322.70	P	⊙	2.60	5.45	2-3	
4275.72	U	(1)	2.55	5.43	4-4	
4270.31	P	⊙	2.58	5.47	3-2	
4283.40	P	⊙	2.60	5.48	2-1	
4246.79	P		2.58	5.48	3-4	b^3F-w^5D^o
4251.88	P	⊙	2.60	5.50	2-3	(216)
4067.275	B	4	2.55	5.58	4-3	b^3F-x^3D^o
4095.975	I	4	2.58	5.59	3-2	(217)
4078.385	J	4	2.60	5.62	2-1	
4106.268	V	(1)	2.58	5.58	3-3	
•4123.748	J	(1)	2.60	5.59	2-2	
4134.19	P	⊙	2.60	5.58	2-3	
4055.046	V	3	2.55	5.59	4-5	b^3F-y^3G^o
4071.52	U	(1)	2.58	5.61	3-4	(218)
4078.498	V	(1)	2.60	5.62	2-3	
4033.19	P	(1)	2.55	5.61	4-4	
4049.336	V	(1)	2.58	5.62	3-3	
4011.416	V	(1)	2.55	5.62	4-3	
3985.32	P	⊙	2.55	5.64	4-5	b^3F-x^5G^o
4005.49	P	⊙	2.58	5.66	3-4	(219)
4019.05	U	(1)	2.60	5.67	2-3	
3968.38	P		2.55	5.66	4-4	
3992.64	P	⊙	2.58	5.67	3-3	
•4010.77	W	(1)	2.60	5.67	2-2	
3955.77	P	⊙	2.55	5.67	4-3	
3984.48	P	⊙	2.58	5.67	3-2	
3921.27	U	(1)	2.55	5.70	4-5	b^3F-z^3I^o (220)
3833.311	J	5	2.55	5.77	4-4	b^3F-u^5D^o
3864.31	P	⊙	2.58	5.77	3-3	(221)
3867.45	P	⊙	2.60	5.79	2-2	
3829.771	U	(2)	2.55	5.77	4-3	
3842.975	U	(1)	2.58	5.79	3-2	
3834.73	P		2.60	5.82	2-1	
3867.935	V	1	2.58	5.77	3-4	
3808.731	J	4	2.55	5.79	4-4	b^3F-x^3F^o
3813.059	J	5?	2.58	5.81	3-3	(222)
3821.834	J	3	2.60	5.83	2-2	
3779.424	V	3•	2.55	5.81	4-3	
3797.948	J	(1)	2.58	5.83	3-2	
3842.90	P	⊙	2.58	5.79	3-4	
3837.132	J	1	2.60	5.81	2-3	
3791.504	J	(1)	2.55	5.80	4-5	b^3F-z^3H^o
•3811.05	U	(1)	2.58	5.82	3-4	(223)
3777.448	J	2	2.55	5.82	4-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
m3790.24	P	Fe	2.55	5.80	4-3	b^3F-w^3D^o
m3806.76	P	Fe	2.58	5.82	3-2	(224)
3810.90	P	⊙	2.60	5.84	2-1	
3824.074	J	1	2.58	5.80	3-3	
3830.757	J	1	2.60	5.82	2-2	
3848.29	P	⊙	2.60	5.80	2-3	
3733.20	P	⊙	2.55	5.85	4-5	b^3F-w^5G^o
3742.07	W	(1)	2.58	5.87	3-4	(225)
3750.577	V	(1)	2.60	5.89	2-3	
3709.665	U	(1)	2.55	5.87	4-4	
3727.67	P	⊙	2.58	5.89	3-3	
3731.374	J	2	2.60	5.90	2-2	
*3695.507	V	(1)	2.55	5.89	4-3	
*3708.602	V	(1)	2.58	5.90	3-2	
3766.092	V	(1)	2.58	5.85	3-2	b^3F-1^o
3789.570	J	(1)	2.60	5.85	2-2	(226)
3728.668	J	1	2.55	5.86	4-4	b^3F-z^1G^o
3761.416	J	1	2.58	5.86	3-4	(227)
3676.314	B	6	2.55	5.91	4-5	b^3F-x^3G^o
3711.225	J	3	2.58	5.90	3-4	(228)
3730.945	J	2	2.60	5.91	2-3	
3679.33	W	(1)	2.55	5.90	4-4	
3708.18	P	⊙	2.58	5.91	3-3	
*3663.458	V	1	2.55	5.92	4-4	b^3F-v^5F^o
3668.893	U	(1)	2.58	5.94	3-3	(229)
3675.44	P	⊙	2.60	5.96	2-2	
3637.73	W	(1)	2.55	5.94	4-3	
3653.35	P	⊙	2.58	5.96	3-2	
3660.41	P	⊙	2.60	5.97	2-1	
*3695.054	B	8	2.58	5.92	3-4	
3691.18	P	⊙	2.60	5.94	2-3	
3658.55	U	(1)	2.55	5.92	4-3	b^3F-v^5P^o
*3663.458	V	1	2.58	5.95	3-2	(231)
3668.58	P	(1)	2.60	5.96	2-1?	
3690.095	S	(-)	2.58	5.92	3-3	
3685.66	P	⊙	2.60	5.95	2-2	
*3623.440	G	1	2.55	5.95	4-5	b^3F-w^3G^o
3636.995	J	2	2.58	5.97	3-4	(233)
3643.716	V	1	2.60	5.98	2-3	
3606.38	P	⊙	2.55	5.97	4-4	
m3622.00	P	Fe	2.58	5.98	3-3	
3644.58	P	⊙	2.58	5.96	3-2	b^3F-x^3P^o (235)
3562.60	P	⊙	2.55	6.01	4-4	b^3F-y^1G^o
3592.486	U	(1)	2.58	6.01	3-4	(237)
3511.748	U	(1)	2.55	6.06	4-4	b^3F-w^3F^o
m3524.04	P	Fe	2.58	6.08	3-3	(238)
3520.85	W	(1)	2.60	6.10	2-2	
3495.285	G	8	2.55	6.08	4-3	
3500.564	G	2	2.58	6.10	3-2	
3508.52	W	(1)	2.55	6.07	4-3	b^3F-v^3D^o
3524.075	J	3	2.58	6.08	3-2	(239)
3537.729	J	3	2.60	6.09	2-1	
*3537.491§	J	1	2.58	6.07	3-3	
3544.631	U	(2)	2.60	6.08	2-2	
3558.21	P	⊙	2.60	6.07	2-3	
3526.016	V	1	2.58	6.08	3-3	b^3F-3^o (240)
m3451.66	P	Fe	2.55	6.12	4-5	b^3F-y^3H^o
3464.914	V	(1)	2.58	6.14	3-4	(241)
3468.849	V	4	2.55	6.11	4-5	b^3F-v^3G^o
3476.853	J	(2)	2.58	6.13	3-4	(242)
3469.834	V	2	2.60	6.15	2-3	
3448.889	V	(1)	2.55	6.13	4-4	
3450.14	P	⊙	2.58	6.15	3-3	
3515.41	P	⊙	2.60	6.11	2-2	b^3F-z^1D^o (243)
3410.56	P	⊙	2.58	6.20	3-2	b^3F-w^3P^o
3446.791	V	(1)	2.60	6.18	2-1	(244)
3429.80	P	⊙	2.80	6.20	2-2	
3364.839	V	(1)	2.58	6.24	3-3	b^3F-z^1F^o
3383.387	V	(1)	2.60	6.24	2-3?	(245)
3335.403	V	(1)	2.55	6.25	4-4	b^3F-x^1G^o (246)
3252.12	P	⊙	2.55	6.34	4-4	b^3F-u^5F^o
3227.17	P	⊙	2.55	6.37	4-3	(247)
3229.78 ?	W	(1)	2.58	6.40	3-2	
3285.54	P	⊙	2.55	8.30	4-5	b^3F-x^3H^o (248)
3254.361	V	(1)	2.55	6.34	4-3	b^3F-t^5D^o (249)
3260.276	V	4	2.55	6.33	4-4	b^3F-v^5F^o
*3278.741	V	4	2.58	6.34	3-3	(250)
3314.450	V	(2)	2.80	6.32	2-2	
3253.839	V	(1)	2.55	6.34	4-3	
3296.467	U	(1)	2.58	6.32	3-2	
3252.928	V	4	2.55	6.34	4-5	b^3F-u^3G^o
3246.492	V	3	2.58	6.38	3-4	(252)
3249.204	V	3	2.55	6.35	4-4	b^3F-4^o (253)
m3219.60	P	Fe	2.55	6.38	4-3	b^3F-u^5P^o
3217.53	P	⊙	2.58	6.41	3-2	(254)
3242.268	V	(1)	2.58	6.38	3-2	b^3F-y^1D^o (255)
3237.234	V	(1)	2.58	6.39	3-2	b^3F-7^o (256)
Fe I continued						
3253.954	V	(2)	2.60	6.39	2-2	b^3F-x^1D^o (257)
3191.11	W	(1)	2.55	6.42	4-3	b^3F-u^3D^o
3181.532	G	4	2.58	6.46	3-2	(258)
3176.366	V	2	2.60	6.48	2-1	
3198.266	U	(1)	2.60	6.46	2-2	
3232.16	P	⊙	2.60	6.42	2-3	
3166.435	G	6	2.55	6.45	4-3	b^3F-t^3D^o
3190.02	W	(1)	2.58	6.45	3-3	(259)
3159.25	P	⊙	2.60	6.50	2-3	
3126.84	P	⊙	2.55	6.50	4-5	b^3F-w^3H^o
3111.686	U	(2)	2.55	6.51	4-4	(260)
3093.888	V	(2 1d)	2.55	6.54	4-3	b^3F-s^3D^o
3116.39	P	⊙	2.58	6.54	3-3	(261)
3052.78	P	⊙	2.55	6.59	4-3	b^3F-t^5P^o
3007.75	P	⊙	2.58	6.68	3-2	(262)
3018.35	P	⊙	2.55	6.64	4-3	b^3F-x^1F^o
3054.949	S	(-)	2.60	6.64	2-3	(263)
10422.99	D	0	2.68	3.86	5-4	a^3G-z^3F^o
10195.11	F	2	2.73	3.93	4-3	(264)
10113.86	F	2	2.75	3.97	3-2	
8345.20	P	⊙	2.68	4.16	5-5	a^3G-y^5F^o
8303.11	P	⊙	2.73	4.20	4-4	(265)
8112.17	P	⊙	2.68	4.20	5-4	
8108.33	P	⊙	2.73	4.24	4-3	
8129.32	P	⊙	2.75	4.26	3-2	
7650.95	P		2.68	4.39	5-5	a^3G-z^5G^o
7540.44	P	⊙	2.73	4.35	4-4	(266)
7481.74	P	⊙	2.75	4.40	3-3	
7382.63	P	⊙	2.68	4.35	5-4	
7344.18	P	⊙	2.73	4.40	4-3	
7347.16	P	⊙	2.75	4.43	3-2	
7316.77	P	⊙	2.68	4.37	5-5	a^3G-z^3G^o
7261.00	P	⊙	2.73	4.42	4-4	(267)
7238.70	O	1	2.75	4.45	3-3	
7114.55	P	⊙	2.68	4.42	5-4	
7100.20	P	⊙?	2.73	4.45	4-3	
7471.75	P	⊙	2.73	4.37	4-5	
6677.993	B	600	2.68	4.53	5-4	a^3G-y^3F^o
6593.919	B	300	2.73	4.59	4-3	(268)
6546.245	B	200	2.75	4.63	3-2	
6806.851	L	10	2.73	4.53	4-4	
6703.573	L	10	2.75	4.59	3-3	
6180.216	V	(2)	2.73	4.71	4-3	a^3G-y^3D^o
6085.267	V	(1)	2.75	4.77	3-2	(269)
5391.78	P	⊙	2.68	4.97	5-5	a^3G-x^5F^o (270)
4432.90	P	⊙	2.73	5.50	4-3	a^3G-v^5D^o
4460.13	P	⊙	2.75	5.51	3-2	(271)
4305.13	P	⊙	2.73	5.58	4-3	a^3G-x^3D^o
*4340.49	P	(1)	2.75	5.59	3-2	(272)
*4239.847	J	2	2.68	5.59	5-5	a^3G-y^3G^o
4266.968	J	3	2.73	5.61	4-4	(273)
4288.148	J	(2)	2.75	5.62	3-3	
4215.975	V	(1)	2.68	5.61	5-4	
4248.588	V	(1)	2.73	5.62	4-3	
m4291.44	P	Fe	2.73	5.59	4-5	
4313.04	P	⊙	2.75	5.61	3-4	
4184.22	U	(1)	2.68	5.63	5-6	a^3G-x^5G^o
4213.43	P	⊙	2.73	5.64	4-5	(274)
4239.01	P	⊙	2.75	5.66	3-4	
*4163.676	V	(1)	2.68	5.64	5-5	
4194.50	P	⊙	2.73	5.66	4-4	
4224.63	P	⊙	2.75	5.67	3-3	
4145.209	V	(1)	2.68	5.66	5-4	
4180.41	P	⊙	2.73	5.67	4-3	
*4215.430	J	2	2.75	5.67	3-2	
4113.17	P	⊙	2.68	5.68	5-6	a^3G-z^3I^o (275)
3998.054	I	10	2.68	5.77	5-4	a^3G-u^5D^o
4039.94	W	(1)	2.73	5.77	4-3	(276)
*4043.901	V	5n	2.73	5.77	4-4	
4085.26	P	⊙	2.75	5.77	3-4	
3971.325	I	8	2.68	5.79	5-4	a^3G-x^3F^o
3983.960	I	10	2.73	5.81	4-3	(277)
4007.277	J	6	2.75	5.83	3-2	
4016.54	W	(1)	2.73	5.79	4-4	
4034.109	J	(1)	2.75	5.81	3-3	
4057.356	V	2	2.75	5.79	3-4	
3956.681	B	12	2.68	5.80	5-6	a^3G-z^3H^o
3997.394	I	15	2.73	5.80	4-5	(278)
4031.869	I	12	2.75	5.83	3-4	
3952.606	I	8	2.68	5.80	5-5	
3981.775	J	7	2.73	5.83	4-4	
3937.329	J	3	2.68	5.83	5-4	
3995.996	J	4	2.73	5.80	4-3	a^3G-w^3D^o
4017.096	V	(1)	2.75	5.83	3-2	(279)
4036.37	P	⊙	2.75	5.80	3-3	
3897.896	J	8	2.68	5.85	5-6	a^3G-w^5G^o
*3932.629	J	4	2.73	5.85	4-5	(280)
3945.119	J	4	2.75	5.87	3-4	
3929.114	J	(1)	2.75	5.89	3-3	
3863.745	V	2	2.68	5.87	5-4	
3890.844	J	2	2.73	5.89	4-3	
3907.937	B	4	2.75	5.90	3-2	
Fe I continued						
3971.82	W	(1)	2.75	5.85	3-2	a^3G-1^o (281)
3884.359	J	3	2.68	5.86	5-4	a^3G-z^1G^o
3927.61	P	⊙	2.73	5.86	4-4	(282)
*3966.630	J	10n	2.75	5.88	3-4	
*3861.341	J	2	2.68	5.88	5-5	a^3G-v^5F^o
3855.329	V	(1w)	2.73	5.92	4-4	(283)
3813.638	J	2	2.68	5.92	5-4	
3826.836	J	1	2.73	5.94	4-3	
3893.898	V	(1)	2.75	5.92	3-4	
3827.572	J	1	2.68	5.91	5-5	a^3G-x^3G^o
3873.923	V	1	2.73	5.90	4-4	(284)
3907.464	J	(1)	2.75	5.91	3-3	
3830.850	J	1	2.68	5.90	5-4	
3869.590	V	3*	2.73	5.91	4-3	
3869.562	K	3*	2.73	5.91	4-5	
3910.845	J	(3)	2.75	5.90	3-4	
3770.305	V	3*	2.68	5.95	5-5	a^3G-w^3G^o
3792.156	J	2	2.72	5.97	4-4	(287)
3811.893	J	2	2.75	5.98	3-3	
3751.830	J	(1)	2.68	5.97	5-4	
3775.860	J	(1)	2.73	5.98	4-3	
*3811.05	U	(1)	2.72	5.95	4-5	
3828.510	V	(1n)	2.75	5.97	3-4	
3748.91	P	⊙	2.68	5.97	5-5	a^3G-z^1H^o
3789.178	J	3	2.73	5.97	4-5	(289)
3704.463	B	10	2.68	6.01	5-4	a^3G-y^1G^o
3743.78	P	(0)	2.72	6.01	4-4	(290)
3779.213	U	(1)	2.75	6.01	3-4	
3649.508	B	12	2.68	6.06	5-4	a^3G-w^3F^o
3669.523	B	10	2.72	6.08	4-3	(291)
3677.630	B	12	2.75	6.10	3-2	
3687.656	J	4	2.72	6.06	4-4	
*3703.556	J	5	2.75	6.08	3-3	
3722.028	J	(1)	2.75	6.06	3-4	
3684.108	G	15	2.72	6.07	4-3	a^3G-v^3D^o
*3703.556	J	5	2.75	6.08	3-3	(292)
3718.407	J	3	2.75	6.07	3-3	
3705.71	P	⊙	2.75	6.08	3-3	a^3G-3^o (293)
3606.679	G	20	2.68	6.10	5-6	a^3G-y^3H^o
3621.463	B	15	2.72	6.12	4-5	(294)
3638.296	G	12	2.75	6.14	3-4	
3584.663	B	8	2.68	6.12	5-5	
3605.450	G	15	2.72	6.14	4-4	
3568.977	J	4	2.68	6.14	5-4	
3603.205	G	10	2.68	6.11	5-5	a^3G-v^3G^o
*3618.392	J	2	2.72	6.13	4-4	(295)
3632.001	G	12	2.75	6.15	3-3	
3581.645	J	1	2.68	6.13	5-4	
3589.456	G	3	2.72	6.15	4-3	
3640.388	G	15	2.72	6.11	4-5	
3651.469	B	20	2.75	6.13	3-4	
3527.90	P	⊙	2.75	6.24	3-3	a^3G-z^1F^o (296)
3459.429	V	(2)	2.68	6.25	5-4	a^3G-x^1G^o
3493.69	W	(2)	2.72	6.25	4-4	(297)
3411.88	P	⊙	2.68	6.30	5-5	a^3G-u^5F^o (298)
3411.134	V	(1)	2.68	6.30	5-8	a^3G-x^3H^o
3439.050	V	(1)	2.72	6.30	4-5	(299)
3405.83	W	(2)	2.68	6.30	5-5	
3404.923	U	(1)	2.68	6.31	5-4	a^3G-t^5D^o
3404.755	V	(1)	2.73	6.34	4-3	(300)
3438.10	P	⊙	2.72	6.31	4-4	
3434.029	V	(1w)	2.75	6.34	3-3	
3378.676	G	6	2.68	6.33	5-4	a^3G-v^3F^o
*3404.301	V	3	2.73	6.34	4-3	(301)
3453.032	J	(2)	2.75	6.32	3-2	
3411.353	G	3	2.73	6.33	4-4	
3440.74	P	⊙	2.75	6.33	3-4	
3366.790	V	5	2.68	6.35	5-4	a^3G-4^o
3399.230	V	(1)	2.73	6.35	4-4	(302)
3428.41	P	⊙?	2.75	6.35	3-4	
3341.906	G	5	2.68	6.37	5-5	a^2G-6^o
3373.874	V	(1)	2.73	6.37	4-5	(303)
3370.786	A	10	2.68	6.34	5-5	a^3G-u^3G^o
3369.549	G	8	2.73	6.38	4-4	(304)
3380.111	C	8	2.75	6.40	3-3	
3337.666	C	6	2.68	6.38	5-4	
3351.750	V	3	2.73	6.40	4-3	
3403.299	U	(2)	2.73	6.34	4-5	
3398.226	V	(1)	2.75	6.38	3-4	
*3393.609	V	(1w)	2.75	6.38	3-2	a^3G-y^1D^o (305)
3387.410	V	2	2.75	6.39	3-2	a^3G-x^1D^o (306)
3335.72	P	⊙?	2.73	6.42	4-3	a^3G-u^5D^o
3363.815	V	(1)	2.75	6.42	3-3	(307)
3254.734	V	(2)	2.68	6.47	5-6	a^3G-w^3H^o
3265.55	P	⊙	2.73	6.50	4-5	(308)
3275.685	V	(1)	2.75	6.51	3-4	
3235.593	U	(1)	2.68	6.50	5-5	
3249.037	V	(1)	2.73	6.51	4-4	
3219.37	P	⊙	2.68	6.51	5-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
m3246.05	P	Fe	2.68	6.48	5-6	a^3G-y^3I^o
3235.33	P	⊙	2.72	6.53	4-5	(309)
•3162.335	U	2n	2.68	6.58	5-4	a^3G-9^o (310)
3151.353	G	10	2.72	6.63	4-5	a^3G-y^1H^o (311)
3172.30	P	⊙	2.75	6.64	3-3	a^3G-x^1F^o (312)
3098.191	V	6	2.68	6.66	5-5	a^3G-t^3G^o
3101.003	V	(2)	2.72	6.70	4-4	(313)
3090.209	V	(1)	2.75	6.74	3-3	
3073.982	V	(1)	2.68	6.70	5-4	
3086.487	V	3	2.72	6.74	4-3	
3095.270	V	(2)	2.68	6.67	5-5	a^3G-12^o
3122.665	R	(-)	2.72	6.87	4-5	(314)
3067.952	V	(1)	2.68	6.70	5-4	a^3G-13^o
3094.870	U	(1)	2.72	6.70	4-4	(315a)
3119.04	P	⊙	2.75	6.70	3-4	
3046.819	S	(-)	2.72	6.77	4-4	a^3G-w^1G^o (315)
2959.992	C	10	2.68	6.85	5-6	a^3G-v^3H^o
2990.392	C	6	2.72	6.84	4-5	(316)
3011.482	G	7	2.75	6.84	3-4	
m2965.25	P	Fe	2.68	6.84	5-5	
2988.942	S	(-)	2.72	6.84	4-4	
2980.532	G	5	2.75	6.89	3-3	a^3G-w^1F^o (317)
4957.603	I	60	2.80	5.29	6-5	z^7F^o-e^7D
4920.509	I	60	2.82	5.33	5-4	(318)
4891.496	I	50	2.84	5.36	4-3	
4871.323	I	25	2.85	5.39	3-2	
4859.748	B	15	2.86	5.40	2-1	
5006.126	I	20	2.82	5.29	5-5	
4957.302	J	20	2.84	5.33	4-4	
4918.999	B	30	2.85	5.36	3-3	
4890.762	J	25	2.86	5.39	2-2	
4873.144	I	20	2.87	5.40	1-1	
5044.221	T	(2)	2.84	5.29	4-5	
4985.553	J	7	2.85	5.33	3-4	
4938.820	J	10	2.86	5.36	2-3	
4903.317	B	12	2.87	5.39	1-2	
4878.218	B	12	2.87	5.40	0-1	
•4579.344	V	(1)	2.82	5.52	5-4	z^7F^o-e^5D
4611.19	P	⊙	2.84	5.52	4-4	(319)
4554.467	V	(1)	2.85	5.56	3-3	
4515.17	P	(1)	2.86	5.60	2-2	
4490.24	P	⊙	2.87	5.62	1-1	
4635.62	P	⊙	2.85	5.52	3-4	
4571.44	P	⊙	2.86	5.56	2-3	
4525.875	V	(1)	2.87	5.60	1-2	
•4495.386	V	(1)	2.87	5.62	0-1	
4104.77	P		2.80	5.80	6-5	z^7F^o-e^5F
•4010.77	W	(1)	2.85	5.93	3-2	(320)
3994.27	P	⊙	2.86	5.95	2-1	
4137.97	P	⊙	2.82	5.80	5-5	
4100.35	P	⊙	2.84	5.85	4-4	
4056.53	U	(1)	2.85	5.90	3-3	
•4002.665	V	(1)	2.87	5.95	1-1	
4119.86	P	⊙	2.85	5.85	3-4	
4032.46	W	(1)	2.87	5.93	1-2	
4008.788	V	(1w)	2.87	5.95	0-1	
3610.159	G	20	2.80	6.21	6-6	z^7F^o-e^7F
3571.995	G	6	2.82	6.28	5-5	(321)
3545.639	G	5	2.84	6.32	4-4	
•3565.583	J	3	2.85	6.31	3-3	
3552.828	G	3	2.86	6.34	2-2	
3575.11	W	(1)	2.87	6.32	1-1	
•3547.203	J	(2)	2.80	6.28	6-5	
3528.78	P		2.82	6.32	5-4	
3551.11	P	⊙	2.84	6.31	4-3	
3542.56	P	⊙	2.85	6.34	3-2	
3568.423	U	(1)	2.86	6.32	2-1	
3635.82	P	⊙	2.82	6.21	5-6	
3591.345	U	(1)	2.84	6.28	4-5	
3560.07	P	⊙	2.85	6.32	3-4	
•3575.976	G	2	2.86	6.31	2-3	
3559.45	P	⊙	2.87	6.34	1-2	
3578.380	U	(1)	2.87	8.32	0-1	
m3605.50	P	Fe	2.80	8.22	6-5	z^7F^o-f^7D
3575.249	J	2	2.82	6.27	5-4	(322)
3587.69	P		2.84	6.28	4-3	
3584.790	J	1	2.85	6.30	3-2	
3588.918	J	2	2.86	6.30	2-1	
3631.103	J	7	2.82	6.22	5-5	
3594.632	G	8	2.84	6.27	4-4	
3602.46	W	2	2.85	6.28	3-3	
3595.294	V	2	2.86	6.30	2-2	
3595.66	U	(1)	2.87	6.30	1-1	
•3651.10	W	(1)	2.84	6.22	4-5	
3609.46	P	⊙	2.85	6.27	3-4	
3613.08	P	⊙†	2.86	6.28	2-3	
3602.10	W	1	2.87	8.30	1-2	
3598.98	W	(1)	2.87	6.30	0-1	
3625.140	G	6	2.82	6.22	5-4	z^7F^o-f^5D
3630.353	J	4	2.84	6.24	4-3	(323)
3623.772	U	2	2.85	6.26	3-2	
3610.703	J	2	2.88	6.28	2-1	
3604.383	U	(1)	2.87	6.29	1-0	
•3645.090	V	2	2.84	6.22	4-4	
•3645.494	V	1	2.85	6.24	3-3	
3634.52	P	⊙	2.86	6.26	2-2	
3617.53	P		2.87	6.28	1-1	
3660.33	W	(1)	2.85	6.22	3-4	
3656.35	P	⊙	2.86	6.24	2-3	
3641.45	P	⊙	2.87	6.28	1-2	
3620.88	P	⊙	2.87	6.28	0-1	
3618.30	P	⊙	2.82	6.23	5-4	z^7F^o-e^7P
3620.23	W	(1)	2.84	6.25	4-3	(324)
•3603.534	G	3	2.85	6.28	3-2	
3638.16	P	⊙	2.84	6.23	4-4	
3635.38	P		2.85	6.25	3-3	
3613.15	W	(1)	2.86	6.28	2-2	
3653.35	P	⊙	2.85	6.23	3-4	
3646.10	P	⊙	2.86	6.25	2-3	
3620.00	P		2.87	6.28	1-2	
3586.75	P	(2)	2.80	6.24	6-6	z^7F^o-e^5G
3588.615	G	3	2.82	6.26	5-5	(325)
3572.60	U	(1)	2.84	6.29	4-4	
3556.68	W	(1)	2.85	6.32	3-3	
3563.61	P	⊙	2.80	6.26	6-5	
3612.068	G	8	2.82	6.24	5-6	
•3608.146	J	3	2.84	6.26	4-5	
3587.353	V	2	2.85	6.29	3-4	
3567.045	V	2	2.86	6.32	2-3	
3554.50	W	2	2.87	6.34	1-2	
3570.243	V	30	2.80	6.25	6-7	z^7F^o-e^7G
3554.922	G	40	2.82	6.29	5-6	(328)
3541.083	G	15	2.84	6.32	4-5	
3542.076	G	15	2.85	6.34	3-4	
3536.556	G	15	2.86	6.35	2-3	
3533.201	G	10	2.87	6.36	1-2	
3533.008	J	5	2.87	6.37	0-1	
3530.385	G	2	2.80	6.29	6-6	
3522.268	G	(3)	2.82	6.32	5-5	
3527.793	G	4	2.84	6.34	4-4	
3526.377	J	4	2.85	6.35	3-3	
3526.673	J	5	2.86	6.36	2-2	
3529.818	G	6	2.87	6.37	1-1	
3498.18	P	⊙	2.80	6.32	6-5	
3509.12	W	(1)	2.82	6.34	5-4	
3512.239	U	(1)	2.84	6.35	4-3	
3516.55	W	(1)	2.85	6.36	3-2	
3523.30	W	(1)	2.86	6.37	2-1	
3513.59	P	⊙	2.80	6.31	6-5	z^7F^o-f^5F
3493.57	P	⊙	2.82	6.35	5-4	(327)
3537.896	J	4	2.82	6.31	5-5	
3512.08	W	(1)	2.84	6.35	4-4	
3508.33	W	(1)	2.86	6.38	2-2	
3506.58	P	⊙	2.87	6.39	1-1	
3556.877	G	7	2.84	6.31	4-5	
3526.23	W	(3)	2.85	6.35	3-4	
3518.68	W	(1)	2.86	6.37	2-3	
m3513.68	P	Co	2.87	6.38	1-2	
3509.73	P	⊙	2.87	6.39	0-1	
•3565.583	J	3	2.85	6.31	3-2	z^7F^o-e^5G
•3575.976	G	2	2.86	6.31	2-2	(328)
3582.69	W	(2)	2.87	6.31	1-2	
3525.856	U	(1)	2.84	6.34	4-4	z^7F^o-g^5D
3540.121	G	3	2.85	6.34	3-4	(329)
3512.80	P	⊙	2.85	6.37	3-3	z^7F^o-e^7S
3522.896	U	(1)	2.86	6.37	2-3	(330)
3490.04	P	⊙†	2.86	6.40	2-3	z^7F^o-e^5P (331)
3215.637	V	(3)	2.82	6.63	5-5	z^7F^o-e^3G (332)
•3209.297	G	6	2.80	6.64	6-5	z^7F^o-g^7D
3196.147	V	2	2.82	6.68	5-4	(333)
•3182.076	V	3	2.84	6.72	4-3	
3173.608	U	(1)	2.85	6.74	3-2	
3181.85	W	(3)	2.86	6.74	2-2	
3173.40	W	(1)	2.87	6.76	1-1	
3187.16	P	⊙	2.87	6.74	1-2	
3175.97	W	(1)	2.87	6.76	0-1	
2976.922	U	(1)	2.82	6.97	5-5	z^7F^o-1†
2990.33	P	⊙	2.84	6.97	4-5	(334)
2974.78	W	(1)	2.82	6.97	5-	z^7F^o-2 (335)
11149.34	D	2	2.82	3.93	2-3	b^3P-z^3F^o
10881.85	D	1	2.83	3.97	1-2	(338)
11783.28	D	6	2.82	3.87	2-3	b^3P-z^3D^o
11439.06	D	15	2.83	3.91	1-2	(337)
11251.09	D	3	2.85	3.94	0-1	
11298.83	D	3	2.82	3.91	2-2	
11119.80	D	10	2.83	3.94	1-1	
10987.22	P	⊙	2.82	3.94	2-1	
9370.57	P		2.82	4.14	2-3	b^3P-y^5D^o
9210.030	E	6	2.83	4.17	1-2	(338)
9117.10	F	2	2.85	4.20	0-1	
9118.888	E	25	2.82	4.17	2-2	
9030.87	F	1	2.83	4.20	1-1	
8943.00	F	2	2.82	4.20	2-1	
8946.25	F	1	2.83	4.21	1-0	
8999.561	E	200	2.82	4.19	2-2	b^3P-z^3P^o
8757.193	E	25	2.83	4.24	1-1	(339)
8674.751	E	60	2.82	4.24	2-1	
8611.807	E	40	2.83	4.27	1-0	
9088.328	E	50	2.83	4.19	1-2	
8838.433	E	30	2.85	4.24	0-1	
6979.17	P	⊙	2.82	4.59	2-3	b^3P-y^3F^o
6859.49	P	⊙	2.83	4.63	1-2	(340)
6808.80	P	⊙	2.82	4.83	2-2	
6913.43	P	⊙	2.83	4.62	1-1	b^3P-y^5P^o
6860.96	P	1	2.82	4.62	2-1	(341)
6518.376	I	20	2.82	4.71	2-3	b^3P-y^3D^o
6355.038	I	4	2.83	4.77	1-2	(342)
8270.338	J	(2)	2.85	4.81	0-1	
6311.508	V	(1)	2.82	4.77	2-2	
6289.234	V	(1)	2.83	4.81	1-1	
6187.41	P	⊙	2.82	4.81	2-1	
5835.58	P	⊙	2.82	4.93	2-3	b^3P-x^5D^o
5747.85	P	⊙	2.82	4.97	2-2	(343)
5552.85	P	⊙	2.82	5.04	2-3	b^3P-x^5F^o
5532.13	P		2.83	5.06	1-2	(344)
5529.80	P	⊙	2.85	5.08	0-1	
5536.59	P	⊙	2.82	5.05	2-2	b^3P-z^5S^o
5570.06	P	⊙	2.83	5.05	1-2	(345)
4741.533	B	3	2.82	5.42	2-3	b^3P-w^5D^o
4707.487	J	(2)	2.83	5.45	1-2	(346)
4680.475	V	(1)	2.85	5.48	0-1	
4683.565	J	(2)	2.82	5.45	2-2	
4657.598	V	(1)	2.83	5.48	1-1	
4687.387	J	(1)	2.82	5.45	2-3	b^3P-w^5F^o
4685.03	P	⊙	2.83	5.47	1-2	(347)
4687.67	P	⊙	2.85	5.48	0-1	
4661.33	P	⊙	2.82	5.47	2-2	
4664.71	P		2.83	5.48	1-1	
4641.22	P	⊙	2.82	5.48	2-1	
4604.23	P	⊙	2.82	5.50	2-3	b^3P-v^5D^o
4603.34	P	⊙	2.83	5.51	1-2	(348)
4605.10	P	⊙	2.85	5.53	0-1	
4580.46	P		2.82	5.51	2-2	
4583.941	U	(1)	2.83	5.53	1-1	
4612.64	P	⊙	2.82	5.49	2-2	b^3P-y^5G^o
4635.846	J	(1)	2.83	5.49	1-2	(349)
4466.554	B	12	2.82	5.58	2-3	b^3P-x^3D^o
4476.021	I	10	2.83	5.59	1-2	(350)
4443.197	B	7	2.85	5.62	0-1	
4454.383	B	5	2.82	5.59	2-2	
4422.570	B	6	2.83	5.62	1-1	
4401.447	V	(2)	2.82	5.62	2-1	
4290.870	J	(1)	2.82	5.70	2-3	b^3P-w^5P^o
4278.38	P		2.83	5.72	1-2	(351)
4279.864	J	(1)	2.85	5.73	0-1	
4258.619	J	(1)	2.82	5.72	2-2	
4260.73	P	⊙	2.83	5.73	1-1	
4241.112	V	(1)	2.82	5.73	2-1	
4207.130	J	4	2.82	5.75	2-1	b^3P-z^3G^o
4226.426	J	3	2.83	5.75	1-1	(352)
4245.258	I	6	2.85	5.75	0-1	
4181.758	J	15	2.82	5.77	2-3	b^3P-u^5D^o
4175.640	B	10	2.83	5.79	1-2	(354)
m4143.83	P	Fe	2.85	5.82	0-1	
4156.803	B	12	2.82	5.79	2-2	
4125.884	J	(2)	2.83	5.82	1-1	
4107.492	B	12	2.82	5.82	2-1	
4126.88	U	(1)	2.83	5.82	1-0	
4184.895	B	10	2.82	5.77	2-2	b^3P-y^3P^o
4173.322	J	2	2.83	5.79	1-1	(355)
4154.502	J	12	2.82	5.79	2-1	
4213.650	B	5	2.83	5.76	1-0	
4203.987	B	10	2.83	5.77	1-2	
4191.685	J	(2)	2.85	5.79	0-1	
4121.806	B	5	2.82	5.81	2-3	b^3P-x^3F^o
4123.522	J	4	2.83	5.83	1-2	(356)
•4104.132	K	3	2.82	5.83	2-2	
4134.681	B	12	2.82	5.80	2-3	b^3P-w^3D^o
4132.903	J	8	2.83	5.82	1-2	(357)
4127.612	B	7	2.85	5.84	0-1	
4114.449	B	5	2.82	5.82	2-2	
4109.808	J	9	2.83	5.84	1-1	
4091.561	J	(1)	2.82	5.84	2-1	
4066.979	B	6	2.82	5.85	2-2	b^3P-1^o
4085.011	J	4	2.83	5.85	1-2	(358)
4044.614	J	6	2.82	5.87	2-1	b^3P-y^3S^o
4062.446	J	10	2.83	5.87	1-1	(359)
4079.848	J	4	2.85	5.87	0-1	
4000.02	W	(1)	2.82	5.90	2-2	b^3P-w^5G^o (360)
3978.466	V	(1)	2.82	5.92	2-3	b^3P-v^5P^o
3964.522	J	3	2.83	5.95	1-2	(361)
3961.147	J	(2)	2.85	5.96	0-1	
•3947.533	J	5	2.82	5.95	2-2	
3944.748	J	(2)	2.83	5.96	1-1	
m3927.93	P	Fe	2.82	5.96	2-1	
3953.863	V	(1)	2.82	5.94	2-3	b^3P-v^5F^o
3952.704	V	(1)	2.83	5.96	1-2	(362)
3935.815	B	8	2.82	5.96	2-2	
3935.31	W	(2)	2.83	5.97	1-1	
3918.58	P	⊙	2.82	5.97	2-1	
3925.646	J	4	2.82	5.96	2-2	b^3P-x^3P^o
3909.830	J	3	2.83	5.99	1-1	(364)
3893.316	V	(1)	2.82	5.99	2-1	
3918.418	J	4	2.83	5.98	1-0	
3942.443	B	6	2.83	5.96	1-2	
3925.946	J	8	2.85	5.99	0-1	
•3829.458	V	1	2.83	6.06	1-2	b^3P-2^o (366)
3801.681	J	3	2.82	6.07	2-3	b^3P-v^3D^o
3801.804	J	1	2.83	6.08	1-2	(367)
3809.043	V	(1)	2.85	6.09	0-1	
3786.178	J	4	2.82	8.08	2-2	
3793.872	J	1	2.83	8.09	1-1	
3778.320	U	(1)	2.82	6.09	2-1	
3768.23	W	(1)	2.83	6.11	1-2	b^3P-z^1D^o (368)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3655.465	J	4	2.82	6.20	2-2	b^3P-w^3P^o
*3689.457	G	12	2.83	6.18	1-1	(369)
3674.766	J	2	2.82	6.18	2-1	
3702.033	J	3	2.83	6.17	1-0	
3670.035	V	3	2.83	6.20	1-2	
3703.824	J	3	2.85	6.18	0-1	
3602.77	P	⊙?	2.82	6.24	2-3	b^3P-z^1F^o (370)
3504.455	U	(1)	2.82	6.34	2-3	b^3P-v^3F^o (371)
3448.786	V	(1)	2.82	6.40	2-3	b^3P-u^3G^o (372)
3462.808	V	(1)	2.82	6.38	2-2	b^3P-y^1D^o
*3475.867	V	(1)	2.83	6.38	1-2	(373)
*3457.090	V	(3w)	2.82	6.39	2-2	b^3P-7° (374)
3469.390	V	(1)	2.83	6.39	1-2	b^3P-x^1D^o (375)
*3431.815	J	3	2.82	6.42	2-3	b^3P-u^3D^o
3406.17	P	⊙	2.83	6.46	1-2	(376)
3393.382	V	(1)	2.85	6.48	0-1	
*3393.609	V	(1w)	2.82	6.46	2-2	
*3381.340	V	(2)	2.83	6.48	1-1	
3368.983	V	(1)	2.82	6.48	2-1	
3403.29	P		2.82	6.45	2-3	b^3P-t^3D^o
3361.959	V	(1)	2.83	6.50	1-2	(377)
3432.023	V	(1)	2.85	6.44	0-1?	
3349.739	V	(1)	2.82	6.50	2-2	
3419.706	V	(1)	2.83	6.44	1-1?	
3407.06	P	⊙?	2.82	6.44	2-1?	
3342.298	V	4	2.83	6.53	1-1	b^3P-8°
3354.068	V	3	2.85	6.53	0-1	(378)
3323.737	C	7	2.82	6.53	2-2	b^3P-v^3P^o
3239.35	P		2.83	6.64	1-1	(379)
3228.003	V	(2)	2.82	6.64	2-1	
3335.776	V	4	2.83	6.53	1-2	
*3250.400	V	(2)	2.85	6.64	0-1	
3289.442	V	(2)	2.82	6.57	2-1	b^3P-z^1P^o
3301.227	V	(2)	2.83	6.57	1-1	(380)
*3243.406	V	3	2.82	6.62	2-3	b^3P-y^1F^o (381)
3207.649	V	(1w)	2.82	6.67	2-3	b^3P-11° (382)
3047.201	S	(-)	2.83	6.88	1-2	b^3P-w^1P^o (382a)
5232.946	I	40	2.93	5.29	4-5	z^7P^o-e^7D
5266.562	I	30	2.99	5.33	3-4	(383)
5281.796	I	10	3.03	5.36	2-3	
5139.468	J	20	2.93	5.33	4-4	
5192.350	I	30	2.99	5.36	3-3	
5228.868	J	15	3.03	5.39	2-2	
5068.774	J	10	2.93	5.36	4-3	
5139.260	J	10	2.99	5.39	3-2	
5191.460	J	20	3.03	5.40	2-1	
4768.397	V	3n	2.93	5.52	4-4	z^7P^o-e^5D
4787.84	V	(1)	2.99	5.56	3-3	(384)
4800.14	V	(1)	3.03	5.60	2-2	
4682.58	W	(1)	2.93	5.56	4-3	
4726.165	V	(1)	2.99	5.80	3-2	
4760.07	P	⊙	3.03	5.62	2-1	
4877.61	P	⊙	2.99	5.52	3-4	
4863.78	P	⊙	3.03	5.56	2-3	
3685.998	G	15n	2.93	6.28	4-5	z^7P^o-e^7F
3701.086	G	20	2.99	6.32	3-4	(385)
*3752.420	J	1w	3.03	6.31	2-3	
3637.862	J	3n	2.93	6.32	4-4	
*3707.048	I	8	2.99	6.31	3-3	
3726.927	J	6	3.03	6.34	2-2	
3643.627	J	2	2.93	6.31	4-3	
3682.17	P	⊙	2.99	6.34	3-2	
3744.105	J	4	3.03	8.32	2-1	
3748.969	J	5	2.93	6.22	4-5	z^7P^o-f^7D
3754.506	J	1	2.99	6.27	3-4	(388)
3793.28	P		3.03	6.28	2-3	
*3689.457	G	12	2.93	6.27	4-4	
3746.931	J	6	2.99	6.28	3-3	
3773.699	J	1	3.03	6.30	2-2	
3682.15	P	⊙	2.93	6.28	4-3	
3727.809	J	3	2.99	6.30	3-2	
3766.665	V	1	3.03	6.30	2-1	
3742.621	J	4	2.93	6.22	4-4	z^7P^o-f^5D
3793.478	J	(1)	2.99	6.24	3-3	(387)
3816.92	P	⊙	3.03	6.26	2-2	
3727.096	J	4	2.93	6.24	4-3	
3769.995	V	4	2.99	6.26	3-2	
3790.656	J	(1)	3.03	6.28	2-1	
3735.325	J	6	2.93	6.23	4-4	z^7P^o-e^7P
3782.450	J	1	2.99	6.25	3-3	(388)
3793.354	V	1	3.03	6.28	2-2	
*3716.442	G	12	2.93	6.25	4-3	
3747.00	P	⊙	2.99	6.28	3-2	
3703.697	J	3	2.93	6.26	4-5	z^7P^o-e^5G
m3730.46	P	Co	2.99	6.29	3-4	(389)
3743.56	P	⊙	3.03	6.32	2-3	
*3666.34	W	1	2.93	6.29	4-4	
3697.426	G	8n	2.99	6.32	3-3	
3721.513	V	2	3.03	6.34	2-2	
3634.326	G	6n	2.93	6.32	4-3	
3876.879	V	(1)	2.99	6.34	3-2	
3633.07	P	(1)	2.93	6.32	4-5	z^7P^o-e^7G
3681.84	W	(1)	2.99	6.34	3-4	(390)
3709.03	P	⊙	3.03	6.35	2-3	
3664.69	W	(1)	2.99	6.35	3-3	
3602.70	P	⊙	2.93	6.35	4-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3649.70	P	⊙	2.93	6.31	4-5	z^7P^o-f^5F
3664.537	G	2	2.99	6.35	3-4	(391)
3689.37	P	⊙	3.03	6.37	2-3	
*3602.534	G	3	2.93	6.35	4-4	
*3645.494	V	1	2.99	6.37	3-3	
*3707.048	I	8	2.99	6.31	3-2	z^7P^o-e^5S
*3752.420	J	(1w)	3.03	8.31	2-2	(392)
3683.51	P	⊙	2.99	6.39	3-3	z^7P^o-g^5D
*3679.53	W	(1)	2.99	6.34	3-4	(393)
3666.85	P	⊙	3.03	6.39	2-3	
3588.52	P	⊙	2.93	6.37	4-3	z^7P^o-e^7S
3650.031	J	4	2.99	6.37	3-3	(394)
3694.005	G	20	3.03	6.37	2-3	
3554.44	P	⊙	2.93	6.40	4-3	z^7P^o-e^5P
*3584.960	J	4	2.99	6.43	3-2	(395)
3633.64	P	⊙	3.03	6.43	2-1	
3614.77	P		2.99	6.40	3-3	
3627.35	P	⊙	3.03	6.43	2-2	
3657.89	W	1	3.03	6.40	2-3	
3322.474	G	5n	2.93	6.64	4-5	z^7P^o-g^7D
3338.643	V	(3w)	2.99	6.68	3-4	(396)
3342.76	P	⊙	3.03	6.72	2-3	
3287.117	V	(1w)	2.93	6.68	4-4	
3308.703	S	(-)	2.99	6.72	3-3	
3320.800	V	(2n,gn)	3.03	6.74	2-2	
3285.20	U	(1)	2.99	6.74	3-2	
3256.52	P	⊙	2.99	6.77	3-2	z^7P^o-e^3P
3238.535	S	(-)	3.03	6.84	2-1	(397)
*3053.443	U	(2)	2.93	6.97	4-	z^7P^o-2 (398)
10086.27	P	⊙?	2.94	4.16	5-5	b^3G-y^5F^o (399)
9038.84	P	⊙	2.94	4.30	5-6	b^3G-z^5G^o
9375.14	P		2.98	4.29	4-5	(400)
9156.33	P	⊙	3.00	4.35	3-4	
9089.413	E	30	2.94	4.29	5-5	
8975.408	E	10	2.98	4.35	4-4	
8868.42	F	3	3.00	4.40	3-3	
*8713.19	F	(10)	2.94	4.35	5-4	
8698.71	P	⊙	2.98	4.40	4-3	
8631.613	E	10	2.94	4.37	5-5	b^3G-z^3G^o
8582.267	E	15	2.98	4.42	4-4	(401)
8515.08	O	20	3.00	4.45	3-3	
8343.21	P	⊙?	2.94	4.42	5-4	
8358.53	P	⊙	2.98	4.45	4-3	
8878.26	P	⊙	2.98	4.37	4-5	
8747.32	F	2	3.00	4.42	3-4	
7748.281	E	125	2.94	4.53	5-4	b^3G-y^3F^o
7884.302	E	80	2.98	4.59	4-3	(402)
7583.798	E	50	3.00	4.83	3-2	
7954.94	P	⊙	2.98	4.53	4-4	
7904.12	P	⊙	2.98	4.54	4-3	b^3G-y^5P^o
7798.90	P	⊙	3.00	4.59	3-2	(403)
7113.176	I	3	2.98	4.71	4-3	b^3G-y^3D^o
6971.95	V	1	3.00	4.77	3-2	(404)
6310.543	U	(1)	2.94	4.89	5-4	b^3G-x^5D^o
6539.72	W	(2)	3.00	4.89	3-4?	(405)
5261.49	P	⊙	2.94	5.28	5-6	b^3G-y^5G^o
5226.42	P	⊙	2.94	5.30	5-5	(406)
5288.38	P	⊙	2.98	5.31	4-4	
5318.04	P	⊙	3.00	5.33	3-3	
5196.24	P	⊙	2.94	5.31	5-4	
*5326.154	V	(1)	3.00	5.32	3-4	b^3G-z^5H^o
5285.25	P	⊙?	3.00	5.35	3-3	(407)
5204.95	P	⊙?	2.98	5.35	4-3	
4773.52	P	⊙?	3.00	5.59	3-2	b^3G-x^3D^o
4787.50	P	⊙?	3.00	5.58	3-3	(408)
4647.437	B	6	2.94	5.59	5-5	b^3G-y^3G^o
4691.414	B	6	2.98	5.61	4-4	(409)
4710.286	B	5	3.00	5.62	3-3	
4618.765	J	(2)	2.94	5.61	5-4	
4681.975	J	(2)	2.98	5.62	4-3	
*4720.997	J	(1)	2.98	5.59	4-5	
4740.343	J	(1)	3.00	5.61	3-4	
4826.758	S	(-)	2.98	5.64	4-5	b^3G-x^5G^o
*4556.129	J	4n	2.94	5.64	5-5	(410)
4603.956	V	(1)	2.98	5.66	4-4	
4633.764	U	(1)	3.00	5.67	3-3	
4494.47	P	⊙	2.94	5.68	5-6	b^3G-z^3I^o
4473.57	P	⊙	2.94	5.70	5-5	(411)
4358.505	B	3	2.94	5.77	5-4	b^3G-u^5D^o
4418.432	V	(1)	2.98	5.77	4-3	(412)
4433.39	P	⊙	3.00	5.79	3-2	
4423.145	V	(1)	2.98	5.77	4-4	
4461.80	P	⊙	3.00	5.77	3-3	
4326.762	V	(2)	2.94	5.79	5-4	b^3G-x^3F^o
4351.549	J	3	2.98	5.81	4-3	(413)
*4373.563	J	(2)	3.00	5.83	3-2	
4390.460	V	(1)	2.98	5.79	4-4	
4309.382	V	4	2.94	5.80	5-6	b^3G-z^3H^o
4367.581	J	5	2.98	5.80	4-5	(414)
4390.954	B	4	3.00	5.83	3-4	
4304.552	J	(1)	2.94	5.80	5-5	
4348.939	J	(1)	2.98	5.82	4-4	
4386.440	V	(1)	2.94	5.82	5-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4365.902	V	(1)	2.98	5.80	4-3	b^3G-w^3D^o
4385.260	V	(1)	3.00	5.82	3-2	(415)
4239.735	U	3	2.94	5.85	5-6	b^3G-w^5G^o
4290.382	J	(2)	2.98	5.85	4-5	(416)
4299.65	W	(1)	3.00	5.87	3-4	
*4229.516	J	(1gn)	2.94	5.85	5-5	
4259.34	P	⊙?	2.98	5.87	4-4	
4280.63	P	⊙	3.00	5.89	3-3	
4199.37	P	⊙	2.94	5.87	5-4	
4255.499	V	(1)	3.00	5.90	3-2	
4223.73	P	⊙	2.94	5.86	5-4	b^3G-z^1G^o
4284.415	U	(1)	2.98	5.86	4-4	(417)
4196.533	V	(1)	2.94	5.88	5-5	b^3G-v^5F^o
4203.30	U	(1)	3.00	5.94	3-3	(418)
4140.24	P	⊙?	2.94	5.92	5-4	
4164.80	U	(1)	2.98	5.94	4-3	
4237.67	P	⊙	3.00	5.92	3-4	
4156.670	V	(1)	2.94	5.91	5-5	b^3G-x^3G^o
4319.41	P	⊙	2.98	5.90	4-4	(419)
*4254.938	V	(1)	3.00	5.91	3-3	
4160.561	V	(1)	2.94	5.90	5-4	
*4315.430	J	2	2.98	5.91	4-5	
4258.956	J	(1)	3.00	5.90	3-4	
4089.225	J	(1)	2.94	5.95	5-5	b^3G-w^3G^o
*4123.748	J	(1)	2.98	5.97	4-4	(420)
4141.862	V	(1)	3.00	5.98	3-3	
4067.49	P	⊙	2.94	5.97	5-4	
4104.46	P	⊙	2.98	5.98	4-3	
4146.071	V	(2)	2.98	5.95	4-5	
4161.488	V	(1)	3.00	5.97	3-4	
4064.07	P	⊙	2.94	5.97	5-5	b^3G-z^1H^o
4130.211	J	5	2.98	5.97	4-5	(423)
4011.89	P	⊙	2.94	6.01	5-4	b^3G-y^1G^o
4066.597	V	(1)	2.98	6.01	4-4	(424)
4045.139	V	(1)	3.00	6.06	3-2	b^3G-2° (425)
*3947.533	J	5	2.94	6.06	5-4	b^3G-w^3F^o
3979.12	P	⊙	2.98	6.08	4-3	(426)
3983.83	P	⊙	3.00	6.10	3-2	
4000.466	J	3	2.98	6.06	4-4	
*4014.28	W	(1)	3.00	6.08	3-3	
4035.98	P	⊙	3.00	6.06	3-4	
3996.28	P	⊙	2.98	6.07	4-3	b^3G-v^3D^o
*4014.28	W	(1)	3.00	6.08	3-2	(427)
4031.73	P	⊙	3.00	6.07	3-3	
3981.62	P	⊙?	2.98	6.08	4-3	b^3G-3°
4016.81	P		3.00	6.08	3-3	(428)
3897.449	J	(2)	2.94	6.10	5-6	b^3G-y^3H^o
3922.68	P	⊙	2.98	6.12	4-5	(429)
3871.750	J	4	2.94	6.12	5-5	
3903.902	J	5	2.98	6.14	4-4	
3853.462	V	(1)	2.94	6.14	5-4	
3893.391	I	7	2.94	6.11	5-5	b^3G-v^3G^o
3919.069	J	3	2.98	6.13	4-4	(430)
3918.844	J	6	3.00	6.15	3-3	
3868.243	V	(1)	2.94	6.13	5-4	
3885.154	V	(1)	2.98	6.15	4-3	
3944.890	J	3	2.98	6.11	4-5	
3953.156	J	4	3.00	6.13	3-4	
*3978.885	J	(1)	3.00	6.11	3-2	b^3G-z^1D^o (431)
3777.061	J	(1)	2.98	6.24	4-3	b^3G-z^1F^o (432)
3726.06	P	⊙	2.94	6.25	5-4	b^3G-x^1G^o (433)
3716.71	P	⊙	2.98	6.30	4-5	b^3G-u^5F^o
3696.81	P	⊙	3.00	6.34	3-4	(434)
3670.071	J	3	2.94	6.30	5-6	b^3G-x^3H^o
3709.535	J	(1)	2.98	6.30	4-5	(435)
3663.95	W	(1)	2.94	6.30	5-5	
3662.90	P		2.94	6.31	5-4	b^3G-t^5D^o
3669.68	P	⊙	2.98	6.34	4-3	(436)
3708.45	P	⊙	2.98	6.31	4-4	
3699.55	P	⊙	3.00	6.34	3-3	
3632.558	J	3	2.94	6.33	5-4	b^3G-v^3F^o
3669.151	J	3	2.98	6.34	4-3	(437)
3721.606	V	(1)	3.00	6.32	3-2	
*3623.440	G	1	2.94	6.34	5-5	b^3G-u^3G^o
3628.82	P	⊙	2.98	6.38	4-4	(438)
3637.05	P	⊙	3.00	6.40	3-3	
3585.193	V	(2)	2.94	6.38	5-4	
*3608.146	J	3	2.98	6.40	4-3	
*3667.999	V	1	2.98	6.34	4-5	
3658.02	P	⊙	3.00	6.38	3-4	
3663.25	W	(1)	2.98	6.35	4-4	b^3G-4°
3693.008	J	1	3.00	6.35	3-4	(439)
3590.08	W	(1)	2.94	6.37	5-5	b^3G-8°
3633.837	V	1	2.98	6.37	4-5	(440)
*3645.494	V	1	3.00	6.39	3-2	b^3G-x^1D^o (441)
3489.670	J	4	2.94	6.47	5-6	b^3G-w^3H^o
3508.494	J	5	2.98	6.50	4-5	(442)
3516.403	G	5	3.00	6.51	3-4	
3449.06	P	⊙	2.94	6.51	5-4	
*3479.683	V	(1)	2.94	6.48	5-6	b^3G-y^3I^o (443)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3383.692	G	5	2.94	6.56	5-4	$b^3G-9°$
3422.499	J	3	2.96	6.56	4-4	(444)
3448.478	V	(1)	3.00	6.58	3-4	
3409.40	P	⊙	3.00	6.62	3-3	$b^3G-y^1F°$ (445)
3339.202	V	2	2.94	6.63	5-5	$b^3G-y^1H°$ (446)
3372.359	V	(1)	2.96	6.64	4-3	$b^3G-x^1F°$
3397.560	V	(1)	3.00	6.64	3-3	(447)
3357.62	P	⊙	2.96	6.65	4-3	$b^3G-10°$ (448)
3310.347	V	4	2.94	6.66	5-5	$b^3G-t^3G°$
3319.258	V	2	2.96	6.70	4-4	(449)
3303.574	V	(2)	3.00	6.74	3-3	
3362.725	V	(1)	2.94	6.70	5-4	
3279.743	V	(2 1)	2.98	6.74	4-3	
3347.507	V	(1)	2.96	6.66	4-5	
3343.678	V	(1)	3.00	6.70	3-4	
3307.015	V	(1)	2.94	6.67	5-5	$b^3G-12°$
3344.09	P	⊙	2.96	6.67	4-5	(450)
3275.646	V	(1)	2.94	6.70	5-4	$b^3G-13°$
3312.232	V	(1)	2.96	6.70	4-4	(450a)
3336.54	P	⊙	3.00	6.70	3-4	
3228.05	P	Fe	2.94	6.77	5-4	$b^3G-w^1G°$
3257.244	V	2	2.98	6.77	4-4	(451)
3280.763	V	(1)	3.00	6.77	3-4	
3153.064	S	(-)	2.94	6.65	5-6	$b^3G-w^3H°$
3192.84	P	Fe	2.96	6.64	4-5	(452)
3213.771	V	(1)	3.00	6.64	3-4	
3158.99	W	(2)	2.94	6.84	5-5?	
3191.180	S	(-)	2.96	6.64	4-4	
3149.50	P	⊙	2.94	6.65	5-5	$b^3G-x^1H°$ (453)
3156.464	U	(1)	2.96	6.69	4-3	$b^3G-w^1F°$
3178.545	V	2	3.00	6.69	3-3	(454)
3118.079	V	3	2.94	6.90	5-5	$b^3G-s^3G°$
3145.057	V	(2)	2.96	6.90	4-4	(455)
3147.792	V	(1)	3.00	6.93	3-3	
3186.98	P	⊙?	3.00	6.90	3-4	
3066.69	P	⊙?	2.94	6.96	5-5	$b^3G-u^3H°$
3082.872	S	(1)	2.94	6.97	5-4	(456)
3047.047	V	(1)	2.94	6.99	5-4	$b^3G-u^3F°$
3060.545	V	(1)	2.96	7.01	4-3	(457)
3074.157	V	(2)	3.00	7.02	3-3	
3014.120?	S	(-)	2.94	7.03	5-4	$b^3G-v^1G°$ (458)
3030.757	S	(-)	2.96	7.05	4-5	$b^3G-x^3I°$ (459)
2982.234§	U	(1)	2.98	7.12	4-3	$b^3G-t^3F°$ †
2995.836	U	(1)	3.00	7.12	3-2	(460)
2990.34	P	⊙	2.98	7.10	4-4	
3401.72	P		3.00	4.19	2-2	$c^3P-z^3p°$
3423.65	D	3	3.06	4.24	1-1	(461)
3970.26	P	⊙	3.00	4.24	2-1	
3818.36	F	3	3.06	4.27	1-0	
3896.30	D	3	3.06	4.19	1-2	
3783.09	D	3	3.10	4.24	0-1	
4512.95	P	⊙	3.00	4.45	2-3?	$c^3P-z^3G°$ (462)
4223.686	I	12	3.00	4.71	2-3	$c^3P-y^3p°$
4189.17	V	3	3.06	4.77	1-2	(463)
4190.12	P	⊙	3.10	4.81	0-1	
3970.48	P	⊙	3.00	4.77	2-2	
4028.58	P	⊙	3.06	4.81	1-1	
3819.42	P	⊙	3.00	4.81	2-1	
5493.850	T	(0)	3.00	5.25	2-3	$c^3P-x^5p°$
5537.07	P		3.06	5.29	1-2	(464)
5557.90	P	⊙	3.10	5.32	0-1	
5398.90	P	⊙	3.00	5.29	2-2	
5480.909	U	(1)	3.06	5.32	1-1	
5333.77	P	⊙	3.00	5.32	2-1	
5104.038	T	(-)	3.00	5.42	2-3	$c^3P-w^5p°$
5036.931§	R	2	3.00	5.45	2-2	(465)
4979.64	P	⊙	3.00	5.46	2-1	
4945.29	P	⊙	3.00	5.50	2-3	$c^3P-v^5D°$
5025.73	P		3.06	5.51	1-2	(466)
5082.68	P	⊙	3.10	5.53	0-1	
4786.810	B	5	3.00	5.58	2-3	$c^3P-x^3p°$
4874.35	P	⊙	3.06	5.59	1-2	(467)
4886.17	P	⊙	3.10	5.62	0-1	
4773.817	B	3	3.00	5.59	2-2	
4811.04	V	(1)	3.06	5.62	1-1	
4712.104	V	(1)	3.00	5.62	2-1	
4585.59	P	⊙	3.00	5.70	2-3	$c^3P-w^5p°$
4620.13	P	⊙	3.06	5.73	1-1	(468)
4588.82	P	⊙	3.00	5.73	2-1	
4490.084	J	(2)	3.00	5.75	2-1	$c^3P-z^3s°$
4579.825	V	(1)	3.06	5.75	1-1	(469)
4481.205	V	(2)	3.00	5.77	2-3	$c^3P-u^5p°$
4520.34 §	P	(1)	3.06	5.79	1-2	(471)
4528.563	J	(2)	3.10	5.82	0-1	
4432.80	P		3.00	5.79	2-2	
4481.989	J	(4)	3.06	5.82	1-1	
4378.782	V	(1)	3.00	5.82	2-1	
4483.14	P	⊙	3.06	5.82	1-0	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4464.773	V	(2)	3.00	5.77	2-2	$c^3P-y^3P°$
4517.530	B	(2)	3.06	5.79	1-1	(472)
4430.197	V	(2)	3.00	5.79	2-1	
4564.632	V	(1)	3.06	5.76	1-0	
4553.48	P		3.06	5.77	1-2	
4583.72	P	⊙	3.10	5.79	0-1	
4393.03	P	⊙	3.00	5.81	2-3	$c^3P-x^3F°$
4378.994	V	(1)	3.00	5.83	2-2	(473)
4364.662	V	(1)	3.00	5.82	2-2	$c^3P-w^3D°$ (474)
4330.61	P	⊙	3.00	5.85	2-2	$c^3P-1°$
4414.23	P	⊙	3.06	5.85	1-2	(475)
4305.455	B	3	3.00	5.87	2-1	$c^3P-y^3s°$
4367.897	J	3	3.06	5.87	1-1	(476)
4450.320	J	(3)	3.10	5.87	0-1	
4202.755	V	(1)	3.00	5.94	2-3	$c^3P-v^5F°$
4260.135	V	(1)	3.06	5.96	1-2	(476a)
4298.21	P	⊙	3.10	5.97	0-1	
4182.384	J	4	3.00	5.96	2-2	
4239.95	P	⊙	3.06	5.97	1-1	
4162.93	P	⊙	3.00	5.97	2-1	
4254.936	V	(1)	3.00	5.90	2-2	$c^3P-w^5G°$
4335.46	P	⊙	3.06	5.90	1-2	(477)
4230.564	U	(1)	3.00	5.92	2-3	$c^3P-v^5P°$
4273.67	W	(1)	3.06	5.95	1-2	(476)
4309.46	P	⊙	3.10	5.96	0-1	
4195.615	J	(3)	3.00	5.95	2-2	
4250.90	P	⊙	3.06	5.96	1-1	
4141.352	U	(1)	3.00	5.96	2-3	$c^3P-w^3G°$ (480)
4170.906	B	5	3.00	5.96	2-2	$c^3P-x^3P°$
4210.39	P	⊙	3.06	5.99	1-1	(462)
4134.433	V	(1)	3.00	5.99	2-1	
4220.347	J	4	3.06	5.96	1-0	
4248.228	J	4	3.06	5.96	1-2	
4267.830	B	5	3.10	5.99	0-1	
m4044.64	P	Fe	3.00	6.06	2-2	$c^3P-2°$
4117.32	U	(1)	3.06	6.06	1-2	(484)
4013.796	V	(1)	3.00	6.06	2-3	$c^3P-w^3F°$
4053.62	W	(1)	3.06	6.10	1-2	(485)
3963.35	U	(1)	3.00	6.10	2-2	
4031.243	V	(2)	3.00	6.07	2-3	$c^3P-v^3D°$
4065.36	P		3.06	6.08	1-2	(486)
4130.035	U	(1)	3.10	6.09	0-1	
4013.822	J	2	3.00	6.08	2-2	
4076.232	J	(1)	3.06	6.09	1-1	
4004.976	J	(1)	3.00	6.09	2-1	
3976.392	V	(1)	3.00	6.11	2-2	$c^3P-z^1D°$
4046.629	V	(1)	3.06	6.11	1-2	(487)
3667.219	B	7	3.00	6.20	2-2	$c^3P-w^3P°$
3955.956	J	2	3.06	6.18	1-1	(486)
3888.825	V	3	3.00	6.18	2-1	
3970.391	J	4	3.06	6.17	1-0	
3933.606	J	(2)	3.06	6.20	1-2	
4006.631	J	2	3.10	6.18	0-1	
3808.286	J	(1)	3.00	6.24	2-3	$c^3P-z^1F°$ (489)
3689.147	J	1	3.00	6.34	2-3	$c^3P-t^5D°$
3722.23	P	⊙	3.06	6.37	1-2	(490)
3662.73	P	⊙	3.00	6.37	2-2	
3693.79	P	⊙	3.06	6.40	1-1	
3635.19	W	2	3.00	6.40	2-1	
3679.53	W	(1)	3.06	6.41	1-0	
3698.611	J	2	3.00	6.34	2-3	$c^3P-v^3F°$
3762.606	J	(1)	3.06	6.32	1-2	(491)
3721.169	V	(1)	3.00	6.32	2-2	
3638.650	V	1	3.00	6.40	2-3	$c^3P-u^3G°$ (493)
3652.26	P	⊙	3.00	6.38	2-2	$c^3P-y^1D°$
3711.411	J	2	3.06	6.36	1-2	(494)
3645.090	V	2	3.00	6.39	2-2	$c^3P-x^1D°$
3704.010	V	(1)	3.06	6.39	1-2	(495)
3617.766	B	12	3.00	6.42	2-3	$c^3P-u^3D°$
3632.042	J	10	3.06	6.46	1-2	(496)
3645.822	J	6	3.10	6.48	0-1	
3575.374	J	4	3.00	6.46	2-2	
3603.826	J	1	3.06	6.48	1-1	
3548.037	U	(2)	3.00	6.48	2-1	
m3586.10	P	Fe	3.00	6.45	2-3	$c^3P-t^3D°$
3581.916	U	(1)	3.06	6.50	1-2	(497)
3690.450	V	(1)	3.10	6.44	0-1?	
m3526.69	P	Fe	3.00	6.50	2-2	
m3647.43	P	Fe	3.06	6.44	1-1?	
3590.29	P	⊙?	3.00	6.44	2-1?	
3505.065	V	2	3.00	6.53	2-1	$c^3P-8°$
3559.506	J	2	3.06	6.53	1-1	(496)
3600.48	P	⊙?	3.10	6.53	0-1	
m3497.69	P	Fe	3.00	6.53	2-2	$c^3P-y^3P°$
3442.979	V	(1)	3.06	6.64	1-1	(499)
3392.018	V	2	3.00	6.64	2-1	
3552.112	V	1	3.06	6.53	1-2	
3507.39 §	W	(1)	3.06	6.58	1-2	$c^3P-s^3D°$ (500)
3459.911	G	4	3.00	6.57	2-1	$c^3P-x^1P°$
3512.95	W	(1)	3.06	6.57	1-1	(501)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3426.09	P	⊙	3.10	6.70	0-1	$c^3P-t^5p°$
3366.966	V	(1w)	3.06	6.70	1-1	(502)
3339.586	V	(1w)	3.00	6.70	2-1	
3397.221	V	(1)	3.00	6.64	2-3	$c^3P-x^1F°$ (503)
3161.922	U	(2)	3.00	6.66	2-2	$c^3P-w^1D°$ (505)
3001.66	P	(1)	3.00	7.12	2-3	$c^3P-t^3F°$
3035.25	P	⊙	3.06	7.12	1-2	(506)
6931.76	P	⊙	3.03	4.42	4-4	$a^1G-z^3G°$
6669.71	P	⊙	3.03	4.45	4-3	(507)
6254.34	P	⊙	3.03	4.53	4-4	$a^1G-y^3F°$
7941.64	P	⊙	3.03	4.59	4-3	(508)
7350.55	P	⊙	3.03	4.71	4-3	$a^1G-y^3D°$ (509)
5036.61	P	⊙?	3.03	5.48	4-4	$a^1G-v^5D°$ (510)
4842.19	P	⊙?	3.03	5.56	4-3	$a^1G-x^3D°$ (511)
4793.96	P	(1)	3.03	5.61	4-4	$a^1G-y^3G°$ (512)
4636.66	P	⊙	3.03	5.70	4-5	$a^1G-z^3I°$ (513)
4514.169	J	(2)	3.03	5.77	4-4	$a^1G-u^3D°$
4509.306	U	(1)	3.03	5.77	4-3	(514)
4480.142	J	(3)	3.03	5.79	4-4	$a^1G-x^3F°$
4439.643	V	(1)	3.03	5.81	4-3	(515)
4456.331	J	(1)	3.03	5.80	4-5	$a^1G-z^3H°$
4436.931	V	(2)	3.03	5.82	4-4	(516)
4343.699	J	(2)	3.03	5.87	4-4	$a^1G-w^5G°$ (517)
4369.774	B	7	3.03	5.86	4-4	$a^1G-z^1G°$ (518)
4296.040	B	(2)	3.03	5.91	4-5	$a^1G-x^3G°$
4302.191	J	(2)	3.03	5.90	4-4	(520)
4225.956	J	3	3.03	5.95	4-5	$a^1G-w^3G°$
4202.755	V	(1)	3.03	5.97	4-4	(521)
4199.096	J	20	3.03	5.97	4-5	$a^1G-z^1H°$ (522)
4143.416	J	15	3.03	6.01	4-4	$a^1G-y^1G°$ (523)
4074.794	J	5	3.03	6.06	4-4	$a^1G-w^3F°$
4052.664	V	(1)	3.03	6.08	4-3	(524)
4070.45	P	⊙?	3.03	6.07	4-3	$a^1G-v^3D°$ (525)
3994.117	J	2	3.03	6.12	4-5	$a^1G-y^3H°$
3974.65	P	⊙	3.03	6.14	4-4	(526)
4017.156	J	6	3.03	6.11	4-5	$a^1G-v^3G°$
3990.379	J	2	3.03	6.13	4-4	(527)
3955.22	P	⊙	3.03	6.15	4-3	
3643.259	B	6	3.03	6.24	4-3	$a^1G-z^1F°$ (528)
3639.259	B	7	3.03	6.25	4-4	$a^1G-x^1G°$ (529)
3729.34	P	⊙	3.03	6.34	4-4	$a^1G-u^5F°$
3773.364	V	(1)	3.03	6.30	4-5	$a^1G-x^3H°$ (531)
3732.13	P	⊙?	3.03	6.34	4-3	$a^1G-t^5D°$ (532)
3740.061	V	(1)	3.03	6.33	4-4	$a^1G-v^3F°$ (532a)
3730.366	G	3	3.03	6.34	4-5	$a^1G-u^3G°$
3689.697	V	(1w)	3.03	6.36	4-4	(533)
3725.496	J	(1)	3.03	6.35	4-4	$a^1G-4°$ (534)
3695.054	B	6	3.03	6.37	4-5	$a^1G-6°$ (534a)
3617.09	W	(1)	3.03	6.45	4-3	$a^1G-t^3D°$ (535)
3545.632	U	(1)	3.03	6.51	4-4	$a^1G-w^3H°$ (536)
3529.531	U	(1)	3.03	6.53	4-5	$a^1G-y^3I°$ (537)
3522.73	P	Q	3.03	6.54	4-3	$a^1G-s^3D°$ (538)
3437.046	G	3	3.03	6.62	4-3	$a^1G-y^1F°$ (539)
3429.62	P	⊙	3.03	6.63	4-5	$a^1G-y^1H°$ (540)
3425.009	G	4	3.03	6.64	4-3	$a^1G-x^1F°$ (541)
3410.031	U	(1)	3.03	6.65	4-3	$a^1G-10°$ (542)
3329.532	V	(2)	3.03	6.74	4-3	$a^1G-t^3G°$ (542a)
3395.87	P	⊙	3.03	6.67	4-5	$a^1G-12°$ (543)
m3306.35	P	Fe	3.03	6.77	4-4	$a^1G-w^1G°$ (544)
3240.013	U	(1)	3.03	6.84	4-5	$a^1G-w^3H°$
3238.32	P	⊙	3.03	6.84	4-4	(545)
3229.994	U	(3)	3.03	6.85	4-5	$a^1G-x^1H°$ (546)
3202.562	V	2	3.03	6.89	4-3	$a^1G-w^1F°$ (547)
3190.651	U	(2)	3.03	6.90	4-5	$a^1G-s^3G°$
3190.625	V	(2)	3.03	6.90	4-4	(548)
3171.353	V	5	3.03	6.93	4-3	
3073.244	S	(-)	3.03	7.05	4-5	$a^1G-x^3I°$ (549)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
6831.44	P	⊙?	3.20	5.00	4-3	z^5D^o-a^1F (550)
6677.54	P	⊙	3.20	5.05	4-3	z^5D^o-X (551)
6647.90	P	⊙	3.23	5.08	3-2	
6786.41	P	⊙	3.23	5.05	3-3	
6737.29	P	⊙	3.25	5.08	2-2	
6879.59	P	⊙	3.25	5.05	2-3	
6801.31	P	⊙?	3.27	5.08	1-2	
5909.99	W	(3)	3.20	5.29	4-5	z^5D^o-e^7D
5872.73	P		3.23	5.33	3-4	(552)
*5848.09	W	(2n)	3.25	5.36	2-3	
5827.89	P	⊙	3.27	5.39	1-2	
5807.79	P	⊙	3.28	5.40	0-1	
5791.044	V	(2)	3.20	5.33	4-4	
5780.621	V	(2)	3.23	5.36	3-3	
*5780.83	V	(1)	3.25	5.39	2-2	
5714.88	P	⊙	3.23	5.39	3-2	
5324.185	I	30	3.20	5.52	4-4	z^5D^o-e^5D
5283.628	I	18	3.23	5.56	3-3	(553)
5263.314	J	8	3.25	5.60	2-2	
5253.479	V	(2)	3.27	5.62	1-1	
5217.395	J	5	3.20	5.56	4-3	
5208.601	J	7	3.23	5.60	3-2	
5215.185	J	6	3.25	5.62	2-1	
*5229.857	J	5n	3.27	5.63	1-0	
5393.174	I	10	3.23	5.52	3-4	
5339.935	I	12	3.25	5.56	2-3	
5302.307	I	10	3.27	5.60	1-2	
5273.176	K	(5)	3.28	5.62	0-1	
4736.780	I	12	3.20	5.80	4-5	z^5D^o-e^5F
4707.281	B	8	3.23	5.85	3-4	(554)
4668.142	J	6	3.25	5.90	2-3	
4637.512	J	3	3.27	5.93	1-2	
4613.210	J	2n	3.28	5.95	0-1	
*4654.628	J	5	3.20	5.85	4-4	
4625.052	I	3	3.23	5.90	3-3	
*4607.655	J	3n	3.25	5.93	2-2	
4598.122	J	(2n)	3.27	5.95	1-1	
4574.240	V	(1)	3.20	5.90	4-3	
4565.684	V	(2)	3.23	5.93	3-2	
4568.789	V	(1)	3.25	5.95	2-1	
*4531.633	J	(2)	3.20	5.93	4-4	z^5D^o-e^3F
4464.69	P		3.23	5.99	3-3	(555)
4425.75	P	⊙	3.25	6.04	2-2	
4581.517	J	(2)	3.23	5.93	3-4	
4504.838	J	(2)	3.25	5.99	2-3	
4009.54	P	⊙	3.20	6.28	4-5	z^5D^o-e^7F
3990.55	P	⊙	3.23	6.32	3-4	(556)
*4039.640	V	3n	3.25	6.31	2-3	
*4022.744	U	(1)	3.27	6.34	1-2	
3997.49	P	⊙	3.23	6.31	3-3	
4000.366	J	(1)	3.25	6.34	2-3	
4042.75	P	⊙	3.27	6.32	1-1	
3959.46	P	⊙	3.20	6.31	4-3	
4020.05	P	⊙	3.25	6.32	2-1	
4084.17	P	⊙	3.20	6.22	4-5	z^5D^o-f^7D
4052.72	P	⊙	3.23	6.27	3-4	(557)
4076.810	J	(1w)	3.25	6.28	2-3	
4080.886	V	(1w)	3.28	6.30	0-1	
4013.641	J	(2)	3.20	6.27	4-4	
*4043.901	V	5n	3.23	6.28	3-3	
4054.18	W	(1)	3.25	6.30	2-2	
4069.08	U	(1)	3.27	6.30	1-1	
*4004.976	J	(1)	3.20	6.28	4-3	
*4021.622	V	(1)	3.23	6.30	3-2	
4046.07	P	⊙	3.25	6.30	2-1	
4076.636	J	8n	3.20	6.22	4-4	z^5D^o-f^5D
4098.183	J	4n	3.23	6.24	3-3	(558)
*4104.132	K	3	3.25	6.26	2-2	
4097.099	J	(1)	3.27	6.28	1-1	
4058.237	K	4n	3.20	6.24	4-3	
4070.788	J	5n	3.23	6.26	3-2	
4073.760	K	4n	3.25	6.28	2-1	
4080.226	J	2n	3.27	6.29	1-0	
4116.97	U	(1)	3.23	6.22	3-4	
4131.97	P	⊙	3.25	6.24	2-3	
*4127.807	J	3n	3.27	6.26	1-2	
4109.070	J	(1)	3.28	6.28	0-1	
4067.984	J	8n	3.20	6.23	4-4	z^5D^o-e^7P
4085.312	J	4	3.23	6.25	3-3	(559)
4076.89	P	(1)	3.25	6.28	2-2	
4045.59	P	⊙	3.20	6.25	4-3	
4043.98	P	⊙	3.23	6.28	3-2	
4108.13	P	⊙	3.23	6.23	3-4	
4118.904	V	(1)	3.25	6.25	2-3	
4030.499	J	(8)	3.20	6.26	4-5	z^5D^o-e^5G
4024.735	J	6n	3.23	6.29	3-4	(560)
4018.282	J	(4)	3.25	6.32	2-3	
4016.432	V	(2)	3.27	6.34	1-2	
m3986.18	P	Fe	3.20	6.29	4-4	
3986.30	P	⊙	3.23	6.32	3-3	
3994.00	P		3.25	6.34	2-2	
3948.48	P	⊙	3.20	6.32	4-3	
3962.42	P	⊙	3.23	6.34	3-2	
3947.002	J	4n	3.20	6.32	4-5	z^5D^o-e^7G
3967.964	J	4n	3.23	6.34	3-4	(561)
3979.65	W	(1)	3.25	6.35	2-3	
3989.24	P	⊙	3.27	6.36	1-2	
3996.26	P	⊙	3.28	6.37	0-1	
3948.28	P	⊙	3.23	6.35	3-3	
3984.93	P	⊙	3.27	6.37	1-1	
*3966.630	J	10n	3.20	6.31	4-5	z^5D^o-f^5F
3948.105	J	6n	3.23	6.35	3-4	(562)
3957.037	J	4n	3.25	6.37	2-3	
3963.108	J	6n	3.27	6.38	1-2	
*3966.532	V	(1n)	3.28	6.39	0-1	
Fe I continued						
3911.00	P	(1)	3.20	6.35	4-4	z^5D^o-f^5F
3926.001	V	(1)	3.23	6.37	3-3	(562)
3941.283	J	(3)	3.25	6.38	2-2	cont
3955.352	J	(3)	3.27	6.39	1-1	
3889.33	P		3.20	6.37	4-3	
3910.52	P	⊙	3.23	6.38	3-2	
*3933.606	J	(2)	3.25	8.39	2-1	
3997.48	P	⊙	3.23	6.31	3-2	z^5D^o-e^5S
*4039.640	V	3n	3.25	6.31	2-2	(563)
4052.466	V	(1)	3.27	6.31	1-2	
3936.79	P	⊙	3.20	6.33	4-3	z^5D^o-e^3D
3905.18	P	⊙	3.23	6.39	3-2	(564)
3889.93	P	(1)	3.25	6.42	2-1	
3974.397	J	(1)	3.23	6.33	3-3	
m3935.86	P	Fe	3.25	6.39	2-2	
3911.18	P		3.27	6.42	1-1	
4006.16	P	⊙	3.25	6.33	2-3	
3957.62	W	(1)	3.27	6.39	1-2	
3922.09	P	⊙	3.28	6.42	0-1	
3928.085	J	(1)	3.20	6.34	4-4	z^5D^o-g^5D
3900.519	J	2	3.23	6.39	3-3	(565)
3888.42	P	(1)	3.25	6.43	2-2	
3884.66	W	(1)	3.27	6.45	1-1	
3864.30	P	⊙	3.20	6.39	4-3	
3858.48	P	⊙	3.23	6.43	3-2	
3863.70	P	⊙	3.25	6.45	2-1	
3879.19	P	⊙	3.27	6.45	1-0	
3965.511	J	(1)	3.23	6.34	3-4	
3931.122	J	(3)	3.25	6.39	2-3	
3909.664	J	(1)	3.27	6.43	1-2	
3895.44	P	(1)	3.28	6.45	0-1	
3894.49	U	(1)	3.20	6.37	4-3	z^5D^o-e^7S
3962.353	V	(2)	3.25	6.37	2-3	(566)
3854.375	U	(1)	3.20	6.40	4-3	z^5D^o-e^5P
3855.846	J	(1w)	3.23	6.43	3-2	(567)
3892.98	U	(1)	3.25	6.42	2-1	
3890.39	U	(1)	3.23	6.40	3-3	
3885.76	P	⊙	3.25	6.43	2-2	
3914.273	V	(1)	3.27	6.42	1-1	
3920.839	J	(1)	3.25	6.40	2-3	
3906.97	P	⊙	3.27	6.43	1-2	
3925.201	V	(1)	3.28	6.42	0-1	
3680.675	U	2n	3.20	6.55	4-5	z^5D^o-g^5F
3668.214	U	(1)	3.23	6.59	3-4	(568)
3636.49	P	⊙	3.25	6.65	2-3	
3598.93 ?	W	(1)	3.27	6.70	1-2	
3591.485	U	(1)	3.28	6.71	0-1	
*3636.186	V	2	3.20	6.59	4-4	
3582.34	P	⊙	3.27	6.71	1-1	
*3667.999	V	1	3.20	6.56	4-4	z^5D^o-h^5D
m3647.84	P	Fe	3.23	6.61	3-3	(569)
3618.62	P	⊙	3.25	6.66	2-2	
3615.19	W	(1)	3.27	6.68	1-1	
3616.15	P	(1)	3.20	6.61	4-3	
3592.68	W	(1)	3.23	6.66	3-2	
3597.05	W	3n	3.25	6.68	2-1	
3700.61	P	⊙	3.23	6.56	3-4	
3667.252	G	3n	3.20	6.56	4-3	z^5D^o-f^5P
3644.798	U	(1)	3.23	6.61	3-2	(570)
3624.06	P	⊙	3.25	6.66	2-1	
3671.51	W	(1)	3.25	6.61	2-2	
*3690.450	V	(1)	3.27	6.61	1-2	
3651.03	P	⊙	3.20	6.58	4-5	z^5D^o-f^5G
*3618.392	J	2	3.23	6.64	3-4	(571)
3593.33	W	(1)	3.25	6.69	2-3	
3565.83	P	⊙	3.25	6.71	2-2	
3558.08	P	⊙	3.23	6.70	3-4	z^5D^o-e^5H
3496.60	P	⊙	3.20	6.73	4-3	(572)
3590.99	W	(1)	3.20	6.63	4-5	z^5D^o-e^3G
3579.83	P	⊙	3.23	6.67	3-4	(573)
3621.19	P	⊙	3.23	6.64	3-3	z^5D^o-f^3D
3647.56	P	⊙	3.25	6.64	2-3	(574)
3583.337	J	2	3.28	6.72	0-1?	
3518.23	P	⊙	3.23	6.73	3-4	z^5D^o-e^3H (575)
3473.23	P	⊙	3.20	6.75	4-4	z^5D^o-f^3F
3419.157	V	(1)	3.23	6.84	3-2	(576)
3502.46	P	⊙	3.23	6.75	3-4	
3473.01	P	⊙	3.25	6.81	2-3	
3459.29	P	⊙	3.27	6.84	1-2	
3418.176	U	(2w)	3.27	6.88	1-0	z^5D^o-e^3P
3502.85	P	⊙	3.25	6.77	2-2	(577)
3459.61	P	⊙	3.27	6.84	1-1	
3143.990	G	8	3.20	7.12	4-4	z^5D^o-i^5D
3156.275	G	5n	3.23	7.14	3-3	(578)
3160.200	V	(2n)	3.25	7.16	2-2	
3133.514	V	4n	3.20	7.14	4-3	
3140.385	V	5n	3.23	7.16	3-2	
3167.907	V	(1)	3.23	7.12	3-4	
3174.22	P	⊙	3.27	7.16	1-2	
3150.301	V	(2n)	3.27	7.19	1-2	z^5D^o-4 (578a)
10780.71	P	⊙	3.23	4.37	6-5	b^3H-z^3G^o
10616.75	P	⊙	3.25	4.42	5-4	(579)
10577.14	P	⊙	3.29	4.45	4-3	
9673.16	F	1n	3.25	4.53	5-4	b^3H-y^3F^o (580)
5807.22	P	⊙	3.23	5.35	6-6	b^3H-z^5H^o
6007.75	P	⊙	3.25	5.31	5-5	(581)
6065.81	P	⊙	3.29	5.32	4-4	
Fe I continued						
5920.520	V	(2)	3.23	5.31	6-5	b^3H-z^5H^o
5891.12	U	(1)	3.25	5.35	5-6	(581)
6109.318	V	(1)	3.29	5.31	4-5	cont
5587.36	P	⊙?	3.25	5.46	5-5	b^3H-w^5F^o
5675.08	P	⊙?	3.29	5.46	4-5	(583)
5209.90	P	⊙	3.23	5.59	6-5	b^3H-y^3G^o
5240.36	P	⊙	3.25	5.61	5-4	(584)
5279.65	P	⊙	3.29	5.83	4-3	
5277.33	P	⊙	3.25	5.59	5-5	
5317.394	V	(1)	3.29	5.61	4-4	
*5030.784§	R	5	3.23	5.68	6-7	b^3H-z^3I^o
5080.95	P	⊙	3.25	5.68	5-6	(585)
5124.60	P	⊙	3.29	5.70	4-5	
m5018.43	P	Fe+	3.23	5.68	6-6	
5052.97	P	⊙	3.25	5.70	5-5	
4975.415	U	(1)	3.29	5.77	4-4	b^3H-u^5D^o (586)
4867.64	P	⊙	3.25	5.79	5-4	b^3H-x^3F^o (587)
4788.757	J	(4)	3.23	5.80	6-6	b^3H-z^5H^o
4839.549	J	(3)	3.25	5.80	5-5	(588)
*4881.736	J	(2)	3.29	5.83	4-4	
4783.79	P	⊙	3.23	5.80	6-5	
4816.67	P	⊙	3.25	5.82	5-4	
*4845.656	V	(2)	3.25	5.80	5-6	
4903.10	P	⊙?	3.29	5.80	4-3	b^3H-w^3D^o (589)
4737.633	J	(1)	3.25	5.86	5-4	b^3H-z^1G^o
4800.55	P	⊙	3.29	5.86	4-4	(590)
4600.937	J	(1)	3.23	5.91	6-5	b^3H-x^3G^o
4658.29	U	(1)	3.25	5.90	5-4	(591)
4714.182	V	(1n)	3.29	5.91	4-3	
4649.838	U	(1)	3.23	5.88	6-5	b^3H-v^5F^o (592)
4518.45	U	(1)	3.23	5.95	6-5	b^3H-w^3G^o
4541.953	U	(1)	3.25	5.97	5-4	(593)
*4575.80	U	(1)	3.29	5.98	4-3	
4569.06	P	⊙	3.25	5.95	5-5	
4487.74	P	⊙	3.23	5.97	6-5	b^3H-z^1H^o
4537.677	J	(1n)	3.25	5.97	5-5	(594)
4595.363	J	(2)	3.29	5.97	4-5	
*4472.731	J	(2)	3.25	6.01	5-4	b^3H-y^1G^o
4528.76	P	⊙	3.29	6.01	4-4	(595)
4446.90	P	⊙	3.29	6.06	4-4	b^3H-w^3F^o (596)
4285.445	B	3	3.23	6.10	6-6	b^3H-y^3H^o
m4299.25	P	Fe	3.25	6.12	5-5	(597)
4327.92	W	(2)	3.29	6.14	4-4	
4330.962	V	(1)	3.25	6.10	5-6	
4280.53	U	(1)	3.23	6.11	6-5	b^3H-v^3G^o
4294.939	V	(1w)	3.25	6.13	5-4?	(598)
4304.87	P	⊙	3.29	6.15	4-3	
4325.95	P	⊙	3.25	6.11	5-5	
4346.558	J	(2)	3.29	6.13	4-4	
4167.862	V	(2)	3.29	6.25	4-4	b^3H-x^1G^o (599)
*4038.622	Q	(-)	3.29	6.34	4-4	b^3H-u^5F^o
*4099.08	U	(1)	3.29	6.30	4-5?	(600)
4012.16	W	(1)	3.23	6.30	6-6	b^3H-x^3H^o
4004.832	J	(1)	3.23	6.30	6-5	(601)
4041.911	S	(-)	3.29	6.34	4-3	b^3H-t^5D^o (602)
4006.314	J	3	3.25	6.33	5-4	b^3H-v^3F^o
*4041.288	V	(1)	3.29	6.34	4-3	(603)
3956.459	J	9	3.23	6.34	6-5	b^3H-u^3G^o
3948.779	B	10	3.25	6.38	5-4	(604)
3967.423	B	8	3.29	6.40	4-3	
3995.199	J	(1w)	3.25	8.34	5-5	
3992.395	U	(1)	3.29	6.38	4-4	
3989.60	P	⊙	3.25	6.35	5-4	b^3H-4^o (605)
3916.733	I	6	3.23	6.37	6-5	b^3H-6^o
3954.715	U	(1)	3.25	6.37	5-5	(608)
3998.46	P	⊙	3.29	6.37	4-5	
3797.517	B	12	3.23	6.47	6-6	b^3H-w^3H^o
3808.697	G	10	3.25	6.50	5-5	(607)
3824.306	V	2	3.29	6.51	4-4	
3771.50	P	⊙	3.23	6.50	6-5	
3784.27	P	⊙	3.25	6.51	5-4	
3765.542	B	20	3.23	6.50	6-7	b^3H-y^3I^o
3821.181	I	10	3.25	6.48	5-6	(608)
3805.345	B	12	3.29	6.53	4-5	
3785.706	J	(1)	3.23	6.48	6-6	
3765.70	W	(1)	3.25	6.53	5-5	
3704.336	V	(1)	3.23	6.55	6-6	b^3H-z^1I^o
3738.308	B	10	3.25	6.55	5-6	(609)
3705.70	P	⊙	3.25	6.58	5-4	b^3H-9^o (610)
3586.114	B	10	3.23	6.66	6-5	b^3H-t^3G^o
*3584.960	J	4	3.25	6.70	5-4	(611)
3573.896	G	4	3.29	6.74	4-3	
3620.87	P	⊙	3.29	6.70	4-4	
3582.201	J	5	3.23	6.67	6-5	b^3H-12^o
3613.95	P	⊙	3.25	6.67	5-5	(612)
3576.760	B	2	3.25	6.70	5-4	b^3H-13^o
3612.51	P	⊙	3.29	6.70	4-4	(613a)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3512.74	P	⊙	3.25	6.77	5-4	b^3H-w^1G^o
•3547.203	J	(2)	3.29	6.77	4-4	(613)
3402.256	G	5	3.22	8.85	6-6	b^3H-v^3H^o
3437.958	V	(2)	3.25	6.84	5-5	(614)
3469.012	V	(2)	3.29	6.84	4-4	
3409.20	W	(2)	3.22	6.84	6-5	
3436.045	V	(1)	3.25	6.84	5-4	
3430.88	P	⊙	3.25	6.85	5-6	
3398.12	P	⊙	3.22	6.85	6-5	b^3H-x^1H^o
3426.67	P	⊙	3.25	6.85	5-5	(815)
3428.01	P	⊙	3.29	6.89	4-3	b^3H-w^1F^o (616)
3307.234	G	5	3.22	6.95	6-6	b^3H-u^3H^o
3328.867	C	5	3.25	6.96	5-5	(617)
3355.338	C	6	3.29	6.97	4-4	
3301.927	V	(1)	3.22	6.96	6-5	
3324.378	V	(2)	3.25	6.97	5-4	
3334.278	V	(1)	3.25	6.95	5-6	
3359.814	V	(2)	3.29	6.98	4-5	
3305.75	P	⊙	3.25	6.99	5-4	b^3H-u^3F^o
3315.17	P	⊙	3.29	7.01	4-3	(618)
3336.262	V	(3)	3.29	6.99	4-4	
•3296.806‡	V	(1)	3.29	7.03	4-4	b^3H-v^1G^o (619)
3233.053	G	8	3.22	7.04	6-7	b^3H-x^3I^o
3254.363	C	10	3.25	7.05	5-6	(620)
3280.261	C	8	3.29	7.05	4-5	
10145.00	P	⊙?	3.24	4.45	3-3	a^3D-z^3G^o (621)
9556.56	F	1	3.24	4.53	3-4	a^3D-y^3F^o
9485.93	P		3.29	4.59	2-3	(622)
8994.62	P	⊙	3.26	4.63	1-2	
9140.15	P	⊙	3.24	4.59	3-3	
9173.83	U	(1)	3.29	4.63	2-2	
8365.642	E	25	3.24	4.71	3-3	a^3D-v^3D^o
8293.527	E	20	3.29	4.77	2-2	(623)
7941.09	O	10	3.26	4.81	1-1	
9027.96	P	⊙	3.24	4.77	3-2	
8080.668	E	10nd?	3.29	4.81	2-1	
8654.40	P	⊙	3.29	4.71	2-3	
8146.67	P	⊙	3.26	4.77	1-2	
6130.37	P	(1)	3.24	5.25	3-3	a^3D-x^5P^o
8157.41	P	⊙	3.29	5.29	2-2	(624)
5996.22	P	⊙	3.28	5.32	1-1	
6009.83	P	⊙	3.24	5.29	3-2	
6284.00	P	⊙	3.29	5.25	2-3	
5787.27	P	⊙	3.24	5.37	3-4	a^3D-w^5D^o
5623.64	P	⊙	3.26	5.45	1-2	(625)
5648.90	P	⊙	3.24	5.42	3-3	
5568.82	P	⊙	3.24	5.45	3-2	
5617.22	W	(1)	3.24	5.43	3-4	a^3D-w^5F^o
•5562.712	V	(2)	3.26	5.48	1-1	(626)
•5535.419	J	(2)	3.24	5.47	3-2	
5455.09	P	⊙	3.24	5.50	3-3	a^3D-v^5D^o
5541.58	P	⊙	3.29	5.51	2-2	(627)
5282.89	P	⊙	3.24	5.58	3-3	a^3D-x^3D^o
5358.10	P	⊙	3.29	5.59	2-2	(628)
5231.75	P	(1)	3.26	5.62	1-1	
5246.00	P	⊙	3.24	5.59	3-2	
5020.67	P	⊙	3.24	5.70	3-3	a^3D-w^5P^o
5021.894	V	(1)	3.28	5.73	1-2	(629)
4871.94	P	⊙	3.24	5.77	3-3	a^3D-u^5D^o
4813.11	V	(1)	3.26	5.82	1-1	(630)
4838.09	P	⊙	3.24	5.79	3-2	
4876.19	P	⊙	3.24	5.77	3-2	a^3D-y^3P^o
4930.04	P	⊙	3.29	5.79	2-1	(631)
4972.90	P	⊙	3.29	5.77	2-2	
4919.73	P	⊙	3.26	5.77	1-2	
4790.75	P	⊙	3.24	5.81	3-3	a^3D-x^3F^o
4859.31	P	⊙	3.29	5.83	2-2	(632)
4808.155	V	(1)	3.24	5.80	3-3	a^3D-w^3D^o
4873.74	P	⊙	3.29	5.82	2-2	(633)
4791.250	V	(1)	3.28	5.84	1-1	
4780.81	P	⊙	3.24	5.82	3-2	
4841.65	P	⊙	3.29	5.84	2-1	
4822.66	P	⊙	3.28	5.82	1-2	
4716.85	P	⊙	3.24	5.85	3-2	a^3D-1^o
•4807.243	S	(-)	3.29	5.85	2-2	(634)
•4757.582	J	(2)	3.26	5.85	1-2	
4776.075	V	(1)	3.29	5.87	2-1	a^3D-y^3S^o
4737.01	P	⊙	3.28	5.87	1-1	(635)
4828.36	P	⊙	3.24	5.91	3-3	a^3D-x^3G^o (636)
4627.02	P	⊙	3.24	5.90	3-2	a^3D-w^5G^o (637)
4558.939	J	(1)	3.24	5.95	3-2	a^3D-v^5P^o
4614.316	J	(1)	3.29	5.96	2-1	(638)
4594.959	V	(2,g?)	3.26	5.95	1-2	
4516.08	P	⊙	3.24	5.97	3-4	a^3D-w^3G^o
4492.98	P	⊙	3.24	5.98	3-3	(639)
4579.07	P	⊙	3.28	5.96	1-2	a^3D-v^5F^o
4555.75	P	⊙	3.28	5.97	1-1	(640)
4537.796	V	(1)	3.24	5.96	3-2	a^3D-x^3P^o
4566.520	J	(2)	3.29	5.99	2-1	(641)
4533.143	V	(1n,g?)	3.28	5.98	1-0	
4611.05	P	⊙	3.29	5.96	2-2	a^3D-x^3P^o
4521.85	P	⊙	3.28	5.99	1-1	(641)
4565.324	V	(2n)	3.26	5.96	1-2	cont
4414.47	P	(1)	3.26	6.06	1-2	a^3D-2^o (843)
4368.66	P	⊙	3.24	6.08	3-4	a^3D-w^3F^o
4419.78	P	⊙	3.29	6.08	2-3	(644)
4341.57	P	⊙	3.26	6.10	1-2	
4343.22	P	⊙	3.24	8.08	3-3	
4343.257	J	(2)	3.24	6.08	3-2	a^3D-v^3D^o
4409.123	J	(21)	3.29	6.09	2-1	(645)
4440.972	V	(2)	3.29	6.07	2-3	
4377.798	V	(1)	3.26	6.08	1-2	
4422.882	V	(1n)	3.29	8.08	2-3	a^3D-3^o (646)
4304.15	P	⊙	3.29	6.15	2-3	a^3D-v^3G^o
4231.525	V	(1gn)	3.24	6.15	3-3	(647)
4299.49	P	⊙	3.24	6.11	3-2	a^3D-x^1D^o
4374.495	V	(1)	3.29	6.11	2-2	(648)
4172.126	J	5	3.24	6.20	3-2	a^3D-w^3P^o
4268.744	J	2	3.29	6.18	2-1	(649)
4246.02	P	⊙	3.26	6.17	1-0	
4242.730	J	(2)	3.29	6.20	2-2	
•4239.516	J	(1gn)	3.26	6.18	1-1	
4103.62	P	⊙	3.24	8.24	3-3	a^3D-z^1F^o
4171.904	V	(2)	3.29	6.24	2-3	(650)
•4099.08	U	(1)	3.24	8.25	3-4	a^3D-x^1G^o (651)
•3932.629	J	4	3.26	6.40	1-2	a^3D-u^5F^o
•3966.532	V	(1n)	3.29	6.40	2-2	(652)
3914.42	P	⊙	3.28	6.41	1-1	
3948.00	P	⊙	3.29	6.41	2-1	
•4022.744	U	(1)	3.24	6.31	3-4	a^3D-t^5D^o
•4041.288	V	(1)	3.29	6.34	2-3	(654)
3963.43	P	⊙	3.26	6.37	1-2	
3986.176	J	5	3.24	6.33	3-4	a^3D-v^3F^o
4040.650	J	4	3.29	6.34	2-3	(655)
4031.968	V	4	3.26	6.32	1-2	
3976.564	V	(1)	3.24	6.34	3-3	
4067.60	P	⊙	3.29	6.32	2-2	
•4002.665	V	(1)	3.24	8.32	3-2	
3969.628	J	(1)	3.24	6.35	3-4	a^3D-4^o (657)
3965.446	V	(1)	3.24	6.35	3-	a^3D-5^o (658)
3929.308	J	(1)	3.24	6.38	3-4	a^3D-u^3G^o
3966.824	J	(1)	3.29	6.40	2-3	(659)
3925.55	P	⊙	3.24	6.38	3-3	a^3D-u^5P^o
3889.38	P	⊙	3.28	6.43	1-1	(680)
3914.50	P	⊙	3.26	8.41	1-2	
3923.03	P	⊙	3.24	8.38	3-2	a^3D-y^1D^o
3985.393	J	3	3.29	8.38	2-2	(881)
3951.184	I	9	3.26	6.38	1-2	
3914.73	W	(1)	3.24	8.39	3-2	a^3D-x^1D^o
•3978.885	J	(1)	3.29	8.39	2-2	(662)
3883.282	J	(4)	3.24	6.43	3-3	a^3D-u^3D^o
3894.005	J	(2)	3.29	8.46	2-2	(663)
•3829.458	V	1	3.26	6.48	1-1	
3834.46	P	⊙	3.24	6.46	3-2	
3861.60	U	(1)	3.29	6.48	2-1	
•3861.341	J	2	3.28	8.46	1-2	
3846.803	B	8	3.24	6.45	3-3	a^3D-t^3D^o
3836.332	I	4	3.29	8.50	2-2	(664)
3878.726	V	(2)	3.26	6.44	1-1?	
3778.509	J	4	3.24	6.50	3-2	
3911.699	U	(1)	3.29	6.44	2-1?	
3906.748	J	2	3.29	6.45	2-3	
3810.759	J	2	3.29	6.53	2-1	a^3D-8^o
3779.444	V	3•	3.26	6.53	1-1	(665)
3802.383	J	(1)	3.29	6.53	2-2	a^3D-v^3P^o (666)
3740.247	J	3	3.24	6.54	3-3	a^3D-s^3D^o
3751.059	J	(1)	3.29	6.58	2-2	(667)
3796.90	U	(1)	3.29	6.54	2-3	
3757.459	J	1	3.29	8.57	2-1	a^3D-z^1P^o
3727.03	P	⊙	3.26	8.57	1-1	(868)
3688.478	V	(1w)	3.24	8.58	3-4	a^3D-9^o (889)
3843.80	P	(1)	3.24	8.82	3-3	a^3D-y^1F^o
3697.510	V	(1w)	3.29	6.62	2-3	(670)
•3883.618	V	(1)	3.29	8.64	2-3	a^3D-x^1F^o (871)
3613.45	P	⊙	3.24	6.65	3-3	a^3D-10^o
3666.29	P	⊙	3.29	8.85	2-3	(873)
3568.828	V	(2)	3.24	8.70	3-4	a^3D-t^3G^o
3573.403	V	2	3.29	8.74	2-3	(873)
3523.18	P	⊙	3.24	6.74	3-3	
3598.71	W	1	3.24	6.87	3-3	a^3D-11^o
•3851.10	W	(1)	3.29	8.87	2-3	(674)
3560.705	V	5	3.24	8.70	3-4	a^3D-13^o (675)
•3431.815	J	3	3.29	6.88	2-2	a^3D-w^1D^o
3408.442	J	3	3.26	8.88	1-2	(678)
•3381.340	V	(2)	3.24	8.89	3-3	a^3D-w^1F^o (877)
3388.25	P	⊙	3.24	6.90	3-4	a^3D-s^3G^o
3391.84	P	⊙	3.29	6.93	2-3	(678)
3310.498	V	(3)	3.24	6.97	3-4	a^3D-u^3H^o (879)
3292.022	G	8	3.24	6.99	3-4	a^3D-u^3F^o
3314.742	C	7	3.29	7.01	2-3	(880)
3282.891	G	(2)	3.26	7.02	1-2	
3271.498	V	(2)	3.24	7.01	3-3	
3306.495	V	(1)	3.29	7.02	2-2	
3263.45	P	⊙	3.24	7.02	3-2	
3253.610	V	4	3.24	7.03	3-4	a^3D-v^1G^o (681)
3191.41	P	⊙	3.24	7.10	3-4	a^3D-t^3F^o
3223.08	P	⊙	3.29	7.12	2-3	(682)
3193.74	P	⊙	3.26	7.12	1-2	
3216.08	P	⊙	3.29	7.12	2-2	
7478.87	P	⊙	3.35	5.00	4-3	z^5F^o-a^1F (683)
7340.78	P	⊙	3.40	5.08	2-2	z^5F^o-X
7398.78	P	⊙	3.42	5.08	1-2	(684)
6271.289	U	(1)	3.32	5.29	5-5	z^5F^o-e^7D
6349.65	P	⊙	3.35	5.33	4-4	(685)
6332.735	Q	(-)	3.38	5.36	3-3	
6219.54	P	⊙	3.40	5.39	2-2	
6137.51	P	⊙	3.32	5.33	5-4	
6145.42	P	⊙	3.35	5.36	4-3	
6388.41	P	⊙	3.35	5.29	4-5	
6339.96	P	⊙	3.38	5.33	3-4	
5615.652	B	50	3.32	5.52	5-4	z^5F^o-e^5D
5588.763	B	40	3.35	5.56	4-3	(686)
5572.849	B	30	3.38	5.60	3-2	
5589.625	B	20	3.40	5.62	2-1	
5576.097	J	10	3.42	5.63	1-0	
5709.378	K	10	3.35	5.52	4-4	
5658.826	B	10	3.38	5.56	3-3	
5624.549	B	10	3.40	5.60	2-2	
5602.955	J	10	3.42	5.62	1-1	
5784.69	V	(1)	3.38	5.52	3-4	
5712.150	V	(2)	3.40	5.56	2-3	
5658.542	V	(1)	3.42	5.60	1-2	
4966.096	B	8	3.32	5.80	5-5	z^5F^o-e^5F
4946.394	J	4	3.35	5.85	4-4	(687)
4910.027	J	(2)	3.38	5.90	3-3	
4882.151	J	(2)	3.40	5.93	2-2	
4883.653	J	(2)	3.42	5.95	1-1	
4875.89	W	(1)	3.32	5.85	5-4	
4855.883	J	(3)	3.35	5.90	4-3	
4843.155	J	(3)	3.38	5.93	3-2	
4838.519	J	(2n)	3.40	5.95	2-1	
5039.266	V	(2)	3.35	5.80	4-5	
5002.800	J	(6)	3.38	5.85	3-4	
4950.112	J	(2)	3.40	5.90	2-3	
4907.743	K	(1)	3.42	5.93	1-2	
4741.081	J	(1)	3.32	5.92	5-4	z^5F^o-e^3F
4679.229	V	(1)	3.35	5.99	4-3	(688)
4643.58	P	⊙	3.38	6.04	3-2	
4807.735	K	(2)	3.35	5.92	4-4	
4739.699	V	(1)	3.38	5.99	3-3	
4678.41	P	⊙	3.40	6.04	2-2	
4860.98	P	(1)	3.38	5.92	3-4	
4766.87	P	⊙	3.40	5.99	2-3	
4701.90	P	⊙	3.42	6.04	1-2	
4259.988	V	(2)	3.32	6.21	5-6	z^5F^o-e^7F
4224.176	J	6n	3.35	6.28	4-5	(689)
4200.930	J	3n	3.38	6.32	3-4	
•4238.027	J	4	3.40	6.31	2-3	
4234.509	V	3n	3.42	6.34	1-2	
4172.641	V	(1)	3.32	6.28	5-5	
4161.080	V	(1)	3.35	6.32	4-4	
•4208.610	J	3n	3.38	6.31	3-3	
4205.548	J	(2)	3.40	6.34	2-2	
4246.59	P	(1)	3.42	6.32	1-1	
4111.06	P	(1)	3.32	6.32	5-4	
4168.625	V	(1w)	3.35	6.31	4-3	
m4176.57	P	Fe	3.38	6.34	3-2	
m4227.42	P	Fe	3.40	6.32	2-1	
4253.52	P	⊙	3.32	6.22	5-5	z^5F^o-f^7D
4228.71	P	⊙	3.35	8.27	4-4	(690)
4177.07	P	(1)	3.32	6.27	5-4	
4256.212	V	(3)	3.40	6.30	3-1	
4307.08	P	⊙	3.35	6.22	4-5	
4269.87	P	⊙	3.38	6.27	3-4	
4245.358	M	tr?	3.32	6.22	5-4	z^5F^o-f^5D
4278.234	J	(1)	3.35	6.24	4-3	(691)
4320.36	P	(1)	3.38	6.24	3-3	
4320.52	U	(1)	3.40	6.26	2-2	
4306.58	P	(1)	3.42	6.28	1-1	
4341.23	P	⊙	3.38	6.22	3-4	
4351.37	P	⊙	3.40	6.24	2-3	
•4340.51	P	(1)	3.42	6.28	1-2	
m4235.96	P	Fe	3.32	6.23	5-4	z^5F^o-e^7P
4284.309	J	(2)	3.35	6.25	4-3	(692)
4336.86	P	⊙	3.40	6.25	2-3	
4237.434	J	30	3.32	6.24	5-6	z^5F^o-e^5G
4247.432	I	12	3.35	6.28	4-5	(693)
4238.816	I	10n	3.38	6.29	3-4	
4235.460	J	6n	3.40	6.32	2-3	
4217.551	J	7n	3.42	6.34	1-2	
4195.337	J	5	3.32	6.26	5-5	
4198.268	V	(1)	3.35	6.29	4-4	
4198.318	J	4	3.38	6.32	3-3	
4198.645	J	4n	3.40	6.34	2-2	
4147.34	P	⊙	3.32	6.29	5-4	
4156.460	V	(1)	3.35	6.32	4-3	
4169.777	V	(1)	3.38	6.34	3-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4149.372	J	5n	3.32	6.29	5-6	z^5F^o-e^7G
4154.813	J	9n	3.35	6.32	4-5	(694)
4175.89	P	⊙	3.38	6.34	3-4	
4183.790	V	(3b,gn)	3.40	6.35	2-3	
4187.59	W	(1)	3.42	6.36	1-2	
4104.97	U	(1)	3.32	6.32	5-5	
4136.512	J	(1)	3.35	6.34	4-4	
4154.109	J	(1)	3.38	6.35	3-3	
4168.942	V	(1w)	3.40	6.36	2-2	
4087.099	J	(1)	3.32	6.34	5-4	
*4140.441	V	(1)	3.38	6.36	3-2	
4164.24	P	⊙	3.40	6.37	2-1	
4126.192	J	3n	3.32	6.31	5-5	z^5F^o-f^5F
4114.957	J	(1w)	3.35	6.35	4-4	(695)
4139.46	P	⊙	3.38	6.37	3-3	
*4140.441	V	(1)	3.40	6.38	2-2	
4150.258	J	(4)	3.42	6.39	1-1	
4066.02	P	⊙	3.32	6.35	5-4	
4090.984	V	(1w)	3.35	6.37	4-3	
4112.35	V	(1)	3.38	6.38	3-2	
4131.94	P	⊙	3.40	6.39	2-1	
4176.571	J	7n	3.35	6.31	4-5	
4153.906	J	10n	3.38	6.35	3-4	
4157.788	J	8n	3.40	6.37	2-3	
4158.798	J	5n	3.42	6.38	1-2	
*4208.610	J	3n	3.38	6.31	3-2	z^5F^o-e^5S
*4238.027	J	4	3.40	6.31	2-2	(696)
4143.50	P	⊙	3.35	6.33	4-3	z^5F^o-e^3D
4106.437	V	(1)	3.38	6.39	3-2	(697)
4083.780	J	(1)	3.40	6.42	2-1	
4183.035	V	(1)	3.38	6.33	3-3	
*4134.433	V	(1)	3.40	6.39	2-2	
4212.06	P	⊙	3.40	6.33	2-3	
4084.498	J	6	3.32	6.22	5-4	z^5F^o-g^5D
4063.286	J	(3)	3.35	6.24	4-3	(698)
4054.833	V	(1)	3.38	6.26	3-2	
4054.883	V	3	3.40	6.28	2-1	
4065.402	V	(2)	3.42	6.29	1-0	
4133.869	J	(2)	3.35	6.22	4-4	
4101.272	J	(1)	3.38	6.24	3-3	
4082.125	J	(1)	3.40	6.26	2-2	
4072.518	V	(2)	3.42	6.28	1-1	
4173.18	P	⊙	3.38	6.22	3-4	
4139.22	U	(1)	3.40	6.24	2-3	
4099.99	P	⊙	3.42	6.26	1-2	
*4163.676	V	(1)	3.40	6.37	2-3	z^5F^o-e^7S (699)
*4052.312	J	(1)	3.35	6.40	4-3	z^5F^o-e^5P
4051.923	J	(2)	3.38	6.43	3-2	(700)
4090.085	V	(1)	3.38	6.40	3-3	
4079.18	P	⊙	3.40	6.43	2-2	
4105.06	P	⊙	3.42	6.42	1-1	
*4117.872	V	(1)	3.40	6.40	2-3	
4097.02	P	⊙	3.42	6.43	1-2	
3817.64	W	3n	3.32	6.55	5-5	z^5F^o-g^5F
3811.80	P	⊙	3.35	6.59	4-4	(701)
3860.74	P	⊙	3.35	6.55	4-5	
3845.81	P	⊙	3.38	6.59	3-4	
3804.013	J	(2)	3.32	6.56	5-4	z^5F^o-h^5D
3789.82	P	⊙	3.35	6.61	4-3	(702)
3846.001	V	(1w)	3.35	6.56	4-3	z^5F^o-f^5P
3819.50	P	⊙	3.38	6.61	3-2	(703)
3791.73	U	(1)	3.40	6.66	2-1	
3843.72	P	⊙	3.40	6.61	2-2	
3905.01	P	⊙	3.40	6.56	2-3	
3801.975	J	(2w)	3.32	6.56	5-6	z^5F^o-f^5G
3758.11	P	⊙	3.40	6.69	2-3	(704)
3742.937	V	(0)	3.42	6.71	1-2	
3785.78	P	⊙	3.32	6.58	5-5	
3717.19	P	⊙	3.32	6.64	5-4	
3703.43	P	⊙	3.35	6.69	4-3	
3705.26	P	⊙	3.38	6.71	3-2	
*3731.278	V	2	3.32	6.63	5-5	z^5F^o-e^3G
*3716.442	G	12	3.35	6.67	4-4	(705)
3762.205	V	(1)	3.35	6.63	4-5	
3727.53	P	⊙	3.40	6.71	2-3	
3761.06	P	⊙	3.35	6.64	4-3	z^5F^o-f^3D
3717.84	P	⊙	3.40	6.72	3-1	(706)
*3695.507	V	(1)	3.40	6.74	2-2	z^5F^o-g^7D
3691.53	P	⊙	3.42	6.76	1-1	(707)
*3740.061	V	(1)	3.38	6.68	3-4	
3732.77	P	⊙	3.40	6.72	2-3	
3416.52	P	⊙	3.35	6.97	4-5	z^5F^o-1 (708)
3380.004	V	(1)	3.32	6.97	5-	z^5F^o-2 (709)
*3243.406	V	3	3.32	7.12	5-4	z^5F^o-i^5D
3263.009	V	(2)	3.35	7.14	4-3	(710)
3269.240	V	(1w)	3.38	7.16	3-2	
3274.452	V	(2w)	3.35	7.12	4-4	
3286.463	V	(2w)	3.38	7.14	3-3	
3299.079	V	(1w)	3.38	7.12	3-4	
3304.36	P	⊙	3.40	7.14	2-3	
3211.693	V	8	3.32	7.16	5-6	z^5F^o-g^5G
*3214.044	V	20	3.35	7.19	4-5	(711)
*3211.872	V	4	3.38	7.22	3-4	
*3209.397	G	6	3.40	7.25	2-3	
3208.470	G	4	3.42	7.26	1-2	
*3193.417	U	(1)	3.38	7.25	3-3	
3197.53	W	(1)	3.40	7.26	2-2	
3261.332	V	(2)	3.40	7.19	2-2	z^5F^o-4
3273.71	U	(1)	3.42	7.19	1-2	(712)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
8978.17	P	⊙	3.40	4.77	1-2	a^1P-y^3D^o
8729.12	P	2	3.40	4.81	1-1	(713)
5551.29	P	⊙	3.40	5.62	1-1	a^1P-x^3D^o (714)
5245.72	P	⊙	3.40	5.75	1-1	a^1P-z^3S^o (715)
5226.06	P	(1)	3.40	5.76	1-0	a^1P-y^3P^o (716)
5167.70	P	⊙	3.40	5.79	1-2	a^1P-u^3D^o
5091.73	P	⊙	3.40	5.82	1-1	(717)
5029.623	V	(1)	3.40	5.85	1-2	a^1P-1^o (718)
4818.66	P	⊙	3.40	5.96	1-1	a^1P-v^5P^o (719)
4815.22	P	⊙	3.40	5.96	1-2	a^1P-x^3P^o
4779.444	J	(1)	3.40	5.98	1-0	(720)
4804.59	P	(1)	3.40	5.97	1-1	a^1P-v^5F^o (721)
4647.72	P	⊙	3.40	6.06	1-2	a^1P-2^o (722)
4566.990	V	(1)	3.40	6.10	1-2	a^1P-w^3F^o (723)
4607.08	P	⊙	3.40	6.08	1-2	a^1P-v^3D^o (724)
4461.37	W	(1)	3.40	6.17	1-0	a^1P-w^3P^o (725)
4137.002	J	7	3.40	6.38	1-2	a^1P-y^1D^o (726)
*4127.807	J	3n	3.40	6.39	1-2	a^1P-x^1D^o (727)
*4038.622	Q	(-)	3.40	6.46	1-2	a^1P-u^3D^o
4003.764	J	2	3.40	6.48	1-1	(728)
3976.615	J	4	3.40	6.50	1-2	a^1P-t^3D^o
4057.66	P	⊙	3.40	6.44	1-1?	(729)
3949.14	W	(1)	3.40	6.53	1-1	a^1P-8^o (730)
3940.044	V	(1)	3.40	6.53	1-2	a^1P-v^3P^o
3806.203	J	2	3.40	6.64	1-1	(731)
3885.07	P	⊙?	3.40	6.58	1-2	a^1P-s^3D^o (732)
3891.928	J	3	3.40	6.57	1-1	a^1P-z^1P^o (733)
3543.669	J	(4)	3.40	6.88	1-2	a^1P-w^1D^o (734)
3410.171	G	3	3.40	7.02	1-2	a^1P-u^3F^o (735)
*3314.070§	V	(1)	3.40	7.12	1-2	a^1P-t^3F^o (736)
9934.35	P	⊙	3.53	4.77	2-2	a^1D-y^3D^o
9620.93	P	⊙	3.53	4.81	2-1	(737)
6016.66	W	(2)	3.53	5.58	2-3	a^1D-x^3D^o (738)
5614.58	P	⊙?	3.53	5.73	2-1	a^1D-w^5P^o (739)
5555.17	P	⊙	3.53	5.75	2-1	a^1D-z^3S^o (740)
5467.76	P	⊙	3.53	5.79	2-2	a^1D-u^3D^o
5383.750	T	(-)	3.53	5.82	2-1	(741)
5375.30	P	⊙	3.53	5.87	2-1	a^1D-y^3S^o (742)
5198.843	V	(1)	3.53	5.91	2-3	a^1D-x^3G^o (743)
5078.53	P	⊙?	3.53	5.96	2-1	a^1D-v^5P^o (744)
5121.96	P	⊙?	3.53	5.94	2-3	a^1D-v^5F^o
5091.72	P	⊙	3.53	5.96	2-2	(745)
*5031.030	R	2	3.53	5.98	2-3	a^1D-w^3G^o (746)
5020.819	U	(1)	3.53	5.99	2-1	a^1D-x^3P^o (748)
*4889.009	U	(1)	3.53	6.06	2-2	a^1D-2^o (749)
4844.016	V	(2)	3.53	6.08	2-3	a^1D-w^3F^o (750)
4869.45	P	⊙	3.53	6.07	2-3	a^1D-v^3D^o (751)
4705.464	J	(1)	3.53	6.15	2-3	a^1D-v^3G^o (752)
4789.654	B	7	3.53	6.11	2-2	a^1D-z^1D^o (753)
4632.14	P	⊙	3.53	6.20	2-2	a^1D-w^3P^o
4663.183	J	(1)	3.53	6.18	2-1	(754)
4547.851	B	4	3.53	6.24	2-3	a^1D-z^1F^o (755)
4343.86	P	⊙	3.53	6.37	2-3	a^1D-u^5F^o
4304.87	P	⊙	3.53	6.40	2-2	(756)
4393.31	P	⊙	3.53	6.34	2-3	a^1D-v^3F^o
4424.194	V	(1)	3.53	6.32	2-2	(757)
4378.73	P	⊙	3.53	6.35	2-	a^1D-5^o (759)
4305.20	U	(1)	3.53	6.40	2-3	a^1D-u^3G^o
4327.100	J	3	3.53	6.38	2-2	(760)
4317.04	P	(1)	3.53	6.39	2-2	a^1D-y^1D^o (761)
4319.59	P	⊙	3.53	6.46	2-2	a^1D-x^1D^o (762)
4181.55	P	⊙	3.53	6.48	2-1	a^1D-u^3D^o (763)
4151.957	V	(1)	3.53	6.50	2-2	a^1D-t^3D^o
4240.372	J	(2)	3.53	6.44	2-1?	(764)
4122.00	P	⊙	3.53	6.53	2-1	a^1D-8^o (765)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4112.09	P	⊙	3.53	6.53	2-2	a^1D-v^3P^o
*3966.532	V	(1n)	3.53	6.64	2-1	(766)
4059.726	V	3	3.53	6.57	2-1	a^1D-z^1P^o (767)
3989.859	J	(2d)	3.53	6.62	2-3	a^1D-y^1F^o (768)
3973.655	J	3	3.53	6.64	2-3	a^1D-x^1P^o (769)
3953.50	P	⊙	3.53	6.65	2-3	a^1D-10^o (770)
3845.69?	J	(1)	3.53	6.74	2-3	a^1D-t^3G^o (771)
3683.226	J	20	3.53	6.88	2-2	a^1D-w^1D^o (772)
3677.309	J	2	3.53	6.89	2-3	a^1D-w^1F^o (773)
3636.23	W	(1)	3.53	6.93	2-3	a^1D-s^3G^o (774)
3538.31	W	(1)	3.53	7.02	2-2	a^1D-u^3F^o (775)
*3442.979	V	(1)	3.53	7.12	2-3	a^1D-t^3F^o
3434.95	P	⊙	3.53	7.12	2-2	(776)
7094.30	P	⊙	3.56	5.30	5-5	a^1H-y^5G^o (778)
6019.36	P	⊙	3.56	5.61	5-4	a^1H-y^3G^o (780)
5913.35	P	⊙	3.56	5.64	5-5	a^1H-x^5G^o (781)
5584.768	V	(1)	3.56	5.77	5-4	a^1H-u^5D^o (782)
5532.752	V	(1)	3.56	5.79	5-4	a^1H-x^5F^o (783)
*5466.993	V	(1)	3.56	5.82	5-4	a^1H-z^3H^o (784)
5374.78	P	⊙	3.56	5.85	5-5	a^1H-w^3G^o
*5336.154	V	(1)	3.56	5.87	5-4	(785)
5365.403	J	3	3.56	5.86	5-4	a^1H-z^1G^o (786)
5231.41	U	(1)	3.56	5.92	5-4	a^1H-v^5F^o (787)
5257.65	P	⊙	3.56	5.91	5-5	a^1H-x^3G^o
5263.874	V	(1)	3.56	5.90	5-4	(788)
5150.19	P	⊙	3.56	5.95	5-5	a^1H-w^3G^o
5115.788	T	(1)	3.56	5.97	5-4	(789)
≡5110.36	P	Fe	3.56	5.97	5-5	a^1H-z^1H^o (790)
5088.129	J	4	3.56	6.01	5-4	a^1H-y^1G^o (791)
4927.42	W	(1)	3.56	6.06	5-4	a^1H-w^3F^o (792)
4849.67	P	⊙	3.56	6.10	5-6	a^1H-y^3H^o
4809.94	V	(1)	3.56	6.12	5-5	(793)
4843.39	P	⊙	3.56	6.11	5-5	a^1H-v^3G^o
4804.529	V	(1)	3.56	6.13	5-4	(794)
4587.132	J	(2)	3.56	6.25	5-4	a^1H-x^1G^o (795)
4503.592	V	(1)	3.56	6.30	5-6	a^1H-x^3H^o
4493.37	P	(1)	3.56	6.30	5-5	(796)
4432.572	J	(3)	3.56	6.34	5-5	a^1H-u^3G^o
4375.48	P	⊙	3.56	6.38	5-4	(797)
4425.662	V	(1)	3.56	6.35	5-4	a^1H-4^o (798)
4382.777	V	(2)	3.56	6.37	5-5	a^1H-6^o (799a)
4201.73	W	(1)	3.56	6.50	5-5	a^1H-w^3H^o
4174.419	U	(1)	3.56	6.51	5-4	(799)
4219.364	B	12	3.56	6.48	5-6	a^1H-y^3I^o (800)
4118.549	B	15	3.56	6.55	5-6	a^1H-z^1I^o (801)
4014.534	B	10	3.56	6.63	5-5	a^1H-y^1H^o (802)
3972.920	V	(1)	3.56	6.66	5-5	a^1H-t^3G^o (803)
3846.412	J	2	3.56	6.77	5-4	a^1H-w^1G^o (804)
*3748.492§	V	7	3.56	6.85	5-6	a^1H-v^3H^o
3756.939	J	4	3.56	6.84	5-5	(805)
3743.468	J	6	3.56	6.85	5-5	a^1H-x^1H^o (806)
3690.730	J	4	3.56	6.90	5-5	a^1H-s^3G^o (807)
3627.05	W	(1)	3.56	6.96	5-5	a^1H-u^3H^o
3621.718	V	(2)	3.56	6.97	5-4	(808)
3599.624	G	3	3.56	6.99	5-4	a^1H-u^3F^o (809)
3553.741	G	6	3.56	7.03	5-4	a^1H-v^1G^o (810)
3538.77	W	(1)	3.56	7.05	5-6	a^1H-x^3I^o
3534.52	W	(1)	3.56	7.05	5-5	(811)
*3479.683	V	(1)	3.56	7.10	5-4	a^1H-t^3F^o (812)
3169.09	P	⊙	3.56	7.45	5-6	a^1H-t^3H^o (813)
8461.41	P	⊙	3.59	5.05	3-3	z^5P^o-X
8767.65	P	⊙	3.64	5.05	2-3	(814)
*7086.76	V	2	3.59	5.33	3-4	z^5P^o-e^7D
7158.503	V	1	3.64	5.36	2-3	(815)
6953.01	P	⊙	3.59	5.36	3-3	
7057.96	P	⊙	3.64	5.39	2-2	
7135.00	P	⊙?	3.67	5.40	1-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
6400.010	I	800	3.59	5.53	3-4	z^5p^o-e^5D
6411.658	I	400	3.64	5.56	2-3	(816)
6408.031	I	60	3.67	5.60	1-2	
6246.334	K	15	3.59	5.56	3-3	
6301.515	K	15	3.64	5.60	2-2	
6336.835	K	12	3.67	5.62	1-1	
6141.734	K	4	3.59	5.60	3-2	
6232.661	K	5	3.64	5.62	2-1	
6302.507	K	6	3.67	5.63	1-0	
5456.48	W	(1)	3.59	5.85	3-4	z^5p^o-e^5F
•5466.993	V	(1)	3.64	5.90	2-3	(817)
5461.80	P	⊙	3.67	5.93	1-2	
5346.34	P	⊙	3.59	5.90	3-3	
5384.22	P	⊙	3.64	5.93	2-2	
5331.20	P	⊙	3.64	5.95	2-1	
5288.24	P	⊙	3.59	5.92	3-4	z^5p^o-e^3F
5133.22	P	⊙	3.59	5.99	3-3	(818)
4516.37	P	⊙	3.59	6.32	3-4	z^5p^o-e^7F
m4611.29	P	Fe	3.64	6.31	2-3	(819)
4628.69	P	⊙	3.67	6.34	1-2	
m4525.15	P	Fe	3.59	6.31	3-3	
4572.86	P	(1)	3.64	6.34	2-2	
4488.140	J	(2n)	3.59	6.34	3-2	
4598.74	P	⊙	3.64	6.32	2-1	
4596.059	K	(2n)	3.59	6.27	3-4	z^5p^o-f^7D
4673.169	J	(4)	3.64	6.28	2-3	(820)
4701.052	J	(1)	3.67	6.30	1-2	
4584.732	V	(1)	3.59	6.28	3-3	
4643.468	J	(2)	3.64	6.30	2-2	
4690.146	J	(3)	3.67	6.30	1-1	
•4556.139	J	4n	3.59	6.30	3-2	
4632.83	P	⊙	3.64	6.30	2-1	
4678.852	B	7	3.59	6.22	3-4	z^5p^o-f^5D
•4745.806	B	3n	3.64	6.24	2-3	(821)
4768.334	V	(1)	3.67	6.26	1-2	
•4654.628	J	5	3.59	6.24	3-3	
4709.092	J	(3)	3.64	6.26	2-2	
4727.405	J	3n	3.67	6.28	1-1	
4619.294	J	3n	3.59	6.26	3-2	
4669.174	J	(4)	3.64	6.28	2-1	
4704.958	J	(5)	3.67	6.29	1-0	
4667.459	B	6	3.59	6.23	3-4	z^5p^o-e^7P
4738.555	J	3n	3.64	6.25	2-3	(822)
4638.016	J	3	3.59	6.25	3-3	
4673.28	P	⊙	3.64	6.28	2-2	
4584.824	K	(2)	3.59	6.28	3-2	
4560.096	J	(2)	3.59	6.29	3-4	z^5p^o-e^5G
4596.433	U	(1)	3.64	6.32	2-3	(823)
4510.82	P	⊙	3.59	6.32	3-3	
4564.715	V	(1)	3.64	6.34	2-2	
4480.27	P	⊙	3.59	6.34	3-2	
4487.36	P	⊙	3.59	6.34	3-4	z^5p^o-e^7G
4462.20	P	⊙	3.59	6.35	3-3	(824)
•4461.989	J	(4)	3.59	6.35	3-4	z^5p^o-f^5F
4516.45	P	⊙	3.64	6.37	2-3	(825)
4433.793	J	(3n)	3.59	6.37	3-3	
4495.986	J	(1)	3.64	6.38	2-2	
4414.03	P	⊙	3.59	6.38	3-2	
4485.97	P	⊙	3.64	6.39	2-1	
4525.142	I	5n	3.59	6.31	3-2	z^5p^o-e^5S
4611.285	I	5n	3.64	6.31	2-2	(826)
4668.07	P	⊙	3.67	6.31	1-2	
4495.566	J	(1)	3.59	6.33	3-3	z^5p^o-e^3D
•4488.917	J	(2)	3.64	6.39	2-2	(827)
4481.621	J	(3)	3.67	6.42	1-1	
4580.600	K	(2)	3.64	6.33	2-3	
4542.720	V	(1)	3.67	6.39	1-2	
4484.227	I	4	3.59	6.34	3-4	z^5p^o-g^5D
4482.750	V	(2)	3.64	6.39	2-3	(828)
•4479.612	J	(3)	3.67	6.43	1-2	
4401.393	J	(5)	3.59	6.39	3-3	
m4427.30	P	Fe	3.64	6.43	2-2	
4446.842	J	(2)	3.67	6.45	1-1	
4347.854	V	(1)	3.59	6.43	3-2	
4395.288	V	(2)	3.64	6.45	2-1	
4438.353	K	(2)	3.67	6.45	1-0	
4440.479	V	(1)	3.59	6.37	3-3	z^5p^o-e^7S
4523.403	J	(2)	3.64	6.37	2-3	(829)
4388.412	J	4n	3.59	6.40	3-3	z^5p^o-e^5P
4423.858	V	(2 1)	3.64	6.43	2-2	(830)
4485.679	J	(2)	3.67	6.42	1-1	
4433.223	J	3n	3.64	6.42	2-1	
4469.381	I	5n	3.64	6.40	2-3	
4476.082	Q	(4)	3.67	6.43	1-2	
4107.75	P	⊙	3.59	6.59	3-4	z^5p^o-g^5F
4103.61	P	⊙	3.64	6.65	2-3	(831)
4035.25	P	⊙	3.59	6.65	3-3	
4147.49	P	⊙	3.59	6.56	3-3	z^5p^o-f^5P
4148.27	P	⊙	3.64	6.61	2-2	(832)
4087.79	P	⊙	3.64	6.66	2-1	
4219.74	P	⊙	3.64	6.56	2-3	
4117.71	U	(1)	3.64	6.64	2-3	z^5p^o-f^3D
4108.31	P	⊙	3.67	6.67	1-2	(833)
3901.03	P	⊙?	3.59	6.75	3-4	z^5p^o-f^3F
3896.63	P	⊙	3.64	6.81	2-3	(834)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3490.47	P	⊙	3.59	7.12	3-4	z^5p^o-i^5D
3526.96	P	⊙	3.64	7.14	2-3	(835)
•3476.336	V	(2w)	3.59	7.14	3-3	
3507.14	P	⊙	3.64	7.16	2-2	
•3457.090	V	(3w)	3.59	7.16	3-2	
3428.746	V	(2)	3.59	7.19	3-2	z^5p^o-4
3477.98	P	⊙	3.64	7.19	2-2	(836)
3510.18	P	⊙	3.67	7.19	1-2	
5981.38	P	⊙	3.62	5.68	6-6	a^1I-z^3I^o (837)
5649.66	V	(1)	3.62	5.80	6-5	a^1I-z^3H^o (838)
•5538.54	V	(1)	3.62	5.85	6-6	a^1I-w^3G^o
5521.14	P	(1)	3.62	5.85	6-5	(839)
5465.04	P	(1)	3.62	5.88	6-5	a^1I-v^5F^o (840)
5397.60	W	(1)	3.62	5.91	6-5	a^1I-x^3G^o (841)
5384.416	T	(-)	3.62	5.95	6-5	a^1I-w^3G^o (842)
5242.495	B	4	3.62	5.97	6-5	a^1I-z^1H^o (843)
4926.82	P	⊙	3.62	6.12	6-5	a^1I-y^3H^o (844)
4961.908	U	(1)	3.62	6.11	6-5	a^1I-v^3G^o (845)
4604.85	P	⊙	3.62	6.30	6-6	a^1I-x^3H^o
4595.31	P	⊙	3.62	6.30	6-5	(846)
•4531.633	J	(2)	3.62	6.34	6-5	a^1I-u^3G^o (847)
•4479.612	J	(3)	3.62	6.37	6-5	a^1I-6^o (848)
4309.036	J	(2)	3.62	6.48	6-6	a^1I-y^3I^o
4238.61	P	⊙	3.62	6.53	6-5	(849)
4203.953	V	(1)	3.62	6.55	6-6	a^1I-z^1I^o (850)
4095.63	P	⊙	3.62	6.63	6-5	a^1I-y^1H^o (851)
•4052.312	J	(1)	3.62	6.66	6-5	a^1I-t^3G^o (852)
•4047.315	V	(1)	3.62	6.67	6-5	a^1I-12^o (853)
3813.891	V	2	3.62	6.85	6-5	a^1I-x^1H^o (854)
3759.155	V	(1)	3.62	6.90	6-5	a^1I-e^3G^o (855)
3597.24	P	⊙	3.62	7.05	6-5	a^1I-x^3I^o (856)
11355.97	D	1	3.63	4.71	3-3	b^3D-y^3D^o
10725.19	P	⊙	3.62	4.77	2-2	(858)
10332.33	P	⊙	3.62	4.81	1-1	
7323.38	P	⊙?	3.63	5.31	3-4	b^3D-y^5G^o
7282.46	P	⊙?	3.63	5.33	3-3	(859)
6749.52	P	⊙	3.63	5.45	3-2	b^3D-w^5D^o
6603.67	P	⊙	3.62	5.49	1-0	(860)
6474.61	V	(1)	3.62	5.53	1-1	b^3D-v^5D^o (861)
6603.20	P	⊙	3.63	5.49	3-2	b^3D-y^5S^o (862)
6307.85	P	⊙	3.63	5.58	3-3	b^3D-x^3D^o
6301.86	P	⊙	3.62	5.58	2-3	(863)
6043.738	U	(1)	3.63	5.67	3-3	b^3D-x^5G^o (864)
5762.434	V	(1)	3.63	5.77	3-4	b^3D-u^5D^o
5754.41	V	(1)	3.63	5.77	3-3	(866)
5703.434	U	(1)	3.62	5.79	2-2?	
5707.25	P	⊙	3.63	5.79	3-2	
5609.97	P	⊙	3.62	5.82	2-1	
•5600.242	V	(1)	3.62	5.82	1-0	
5760.351	V	(1)	3.63	5.77	3-2	b^3D-y^3P^o
5698.05	W	(1)	3.62	5.79	2-1	(867)
5761.27	W	(1)	3.62	5.76	1-0	
5707.068	V	(1)	3.63	5.79	3-4	b^3D-x^3F^o
5636.708	V	(1)	3.62	5.81	2-3	(868)
5568.81	U	(1)	3.62	5.84	1-1	b^3D-w^3D^o
5660.79	W	(1)	3.62	5.80	2-3	(869)
5611.35	P	⊙	3.62	5.82	1-2	
5487.49	P	⊙	3.63	5.87	3-4	b^3D-w^5G^o
5452.119	U	(1)	3.62	5.89	2-3	(870)
5411.39	P	⊙	3.62	5.90	2-2	
5539.28	W	(1)	3.63	5.85	3-2	b^3D-1^o
•5534.68	W	(1)	3.62	5.85	2-2	(871)
5529.15	W	(2)	3.63	5.86	3-4	b^3D-z^1G^o (872)
5493.33	P	⊙	3.62	5.87	2-1	b^3D-y^3S^o
5482.26	P	⊙	3.62	5.87	1-1	(873)
5431.40	P	⊙	3.63	5.90	3-4	b^3D-x^3G^o
5414.91	P	⊙	3.63	5.91	3-3	(874)
5386.958	T	(1)	3.63	5.92	3-4	b^3D-v^5F^o
5327.35	P	⊙	3.62	5.94	2-3	(875)
5284.27	P	⊙	3.62	5.96	1-2	
5294.555	T	(-)	3.62	5.96	2-2	
5253.25	P	⊙	3.62	5.97	1-1	
5298.789	V	(1)	3.63	5.96	3-2	
5315.78	P	⊙	3.62	5.95	2-2	b^3D-v^5P^o
5270.06	P	⊙	3.62	5.96	1-1	(877)
5320.048	V	(1)	3.63	5.95	3-2	
5305.41	P	●	3.62	5.95	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5280.364	V	(1)	3.63	5.96	3-2	b^3D-x^3P^o
5217.927	T	(2)	3.62	5.99	2-1	(880)
5223.191	V	(1)	3.62	5.98	1-0	
5207.95	P	(1)	3.63	5.99	1-1	
5066.28	P	⊙	3.62	6.06	1-2	b^3D-2^o (882)
5085.201	V	(2)	3.63	6.06	3-4	b^3D-w^3F^o
5027.312	V	(1)	3.62	6.08	2-3	(883)
4970.496	V	(2)	3.62	6.10	1-2	
•5031.030	R	2	3.63	6.08	3-3	
4979.58	W	(1)	3.62	6.10	2-2	
5058.50	W	(1)	3.63	6.07	3-3	b^3D-v^3D^o
5054.647	T	1	3.62	6.07	2-3	(884)
5018.02	P	⊙	3.62	6.08	1-2	
5035.025	R	3	3.63	6.08	3-3	b^3D-3^o (885)
4935.42	P	⊙	3.63	6.13	3-4	b^3D-v^3G^o (886)
4968.709	V	(1)	3.62	6.11	2-2	b^3D-z^1D^o (887)
•4802.883	J	(3)	3.63	6.20	3-2	b^3D-w^3P^o
•4832.734	J	(2)	3.62	6.18	2-1	(888)
•4845.656	V	(2)	3.62	6.17	1-0	
4799.412	V	(1)	3.62	6.20	2-2	
4824.162	V	(1)	3.62	6.18	1-1	
4708.972	V	(1)	3.62	6.24	2-3	b^3D-z^1F^o (889)
4706.31	P	⊙	3.63	6.25	3-4	b^3D-x^1G^o (890)
4490.63	P	⊙	3.62	6.37	2-3	b^3D-u^5F^o
4448.97	P	⊙	3.62	6.40	2-2	(891)
4605.99	P	⊙	3.63	6.31	3-4	b^3D-t^5D^o
4543.22	P	⊙	3.62	6.34	2-3	(893)
4481.04	P	⊙	3.62	6.37	1-2	
4419.30	P	⊙	3.62	6.41	1-0	
•4558.108	J	(1)	3.63	6.33	3-4	b^3D-v^3F^o
4542.422	V	(2)	3.62	6.34	2-3	(894)
4568.842	V	(1)	3.62	6.32	1-2	
4545.54	P	⊙	3.63	6.34	3-3	
4579.68	P	⊙	3.63	6.32	3-2	
4536.509	U	(1)	3.63	6.35	3-4	b^3D-4^o (896)
4527.90	P	(1)	3.62	6.35	2-	b^3D-5^o (897)
4483.78	P	⊙	3.63	6.38	3-4	b^3D-u^3G^o
4452.32	P	⊙	3.63	6.40	3-3	(898)
4479.01	P	⊙	3.63	6.38	3-3	b^3D-u^5P^o
4435.79	P	⊙	3.62	6.41	2-2	(899)
4386.6	W	(1w)	3.62	6.43	1-1	
4438.74	P	⊙	3.63	6.41	3-2	
4393.70	P	⊙	3.62	6.43	2-1	
m4475.99	P	Fe	3.62	6.38	2-3	
4418.60	P	⊙	3.62	6.41	1-2	
•4472.721	J	(2)	3.62	6.38	2-2	b^3D-y^1D^o (900)
4466.183	V	(1)	3.63	6.39	3-2	b^3D-7^o
4463.16	P	⊙	3.62	6.39	2-2	(901)
•4461.989	J	(4)	3.62	6.39	2-2	b^3D-x^1D^o
4454.655	J	(1)	3.62	6.39	1-2	(902)
4360.813	V	(1)	3.63	6.46	3-2	b^3D-u^3D^o (903)
•4378.782	V	(1)	3.63	6.45	3-3	b^3D-t^3D^o
4385.832	V	(1)	3.62	6.50	2-2	(904)
4373.90	P	⊙	3.62	6.45	2-3	
4253.93	P	⊙	3.62	6.53	2-1	b^3D-8^o
4247.29	P	⊙	3.62	6.53	1-1	(905)
4246.090	J	3	3.63	6.53	3-2	b^3D-v^3P^o
4088.567	V	(1)	3.62	6.64	2-1	(906)
4243.368	V	(2)	3.62	6.53	2-2	
4082.44	W	(2)	3.62	6.64	1-1	
4236.76	U	(1)	3.62	6.53	1-2	
4239.36	P	⊙	3.63	6.54	3-3	b^3D-s^3D^o
4236.66	P	⊙	3.62	6.54	2-3	(907)
4181.20	P	⊙	3.62	6.57	1-1	b^3D-z^1P^o (908)
4172.97	P	⊙	3.63	6.58	3-4	b^3D-9^o (909)
4115.89	P	⊙	3.63	6.62	3-3	b^3D-y^1F^o (910)
4096.118	V	(1)	3.62	6.64	2-3	b^3D-x^1F^o (911)
4074.70	P	⊙	3.62	6.65	2-3	b^3D-10^o (912)
4080.490	V	(1)	3.63	6.70	3-4	b^3D-t^3G^o
3960.384	J	(1)	3.62	6.74	2-3	(913)
3962.65	P	⊙	3.63	6.74	3-3	
4058.46	P	⊙	3.63	6.67	3-3	b^3D-11^o
4055.98	W	(1)	3.62	6.67	2-3	(914)
4010.18	W	(1)	3.63	6.70	3-4	b^3D-13^o (915)
3787.164	J	(1)	3.62	6.88	2-2	b^3D-w^1D^o (916)
3781.938	J	(1)	3.62	6.89	2-3	b^3D-w^1F^o (917)
3767.73	P	⊙	3.63	6.90	3-4	b^3D-e^3G^o
3738.51	P	⊙	3.62	6.93	2-3	(918)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3635.08	P	⊙?	3.62	7.02	2-2	b^3D-u^3F^o (919)
3845.80	P	⊙	3.63	7.43	3-4	b^3D-r^3G^o
3224.05	P	⊙	3.62	7.45	2-3	(920)
*3225.607	U	(1)	3.63	7.45	3-3	
6451.58	V	(2)	3.68	5.59	4-5	b^1G-y^3G^o
6396.39	P	⊙	3.68	5.61	4-4	(921)
5849.67	P	⊙	3.68	5.79	4-4	b^1G-x^3F^o
*5780.83	V	(1)	3.68	5.81	4-3	(922)
5619.23	P	⊙?	3.68	5.87	4-4	b^1G-w^3G^o (923)
5662.94	V	(1)	3.68	5.86	4-4	b^1G-z^1G^o (924)
5513.86	P	⊙	3.68	5.92	4-4	b^1G-v^3F^o (925)
5543.04	P	⊙	3.68	5.91	4-5	b^1G-x^3G^o
5549.94	U	(2)	3.68	5.90	4-4	(926)
5543.184	V	(2)	3.68	5.91	4-3	
5423.73	P	⊙	3.68	5.95	4-5	b^1G-w^3G^o
5385.58	P	⊙	3.68	5.97	4-4	(927)
5379.580	J	(2)	3.68	5.97	4-5	b^1G-z^1H^o (928)
5288.533	V	(2)	3.68	6.01	4-4	b^1G-y^1G^o (929)
5177.230	T	(-)	3.68	6.06	4-4	b^1G-w^3F^o
5141.55	P	⊙	3.68	6.08	4-3	(930)
5145.73	P	⊙	3.68	6.08	4-3	b^1G-3° (931)
5084.55	P	⊙	3.68	6.11	4-5	b^1G-v^3G^o (932)
4809.14	V	(1)	3.68	6.24	4-3	b^1G-z^1F^o (933)
*4803.883	J	(3)	3.68	6.25	4-4	b^1G-x^1G^o (934)
4700.171	J	(2n)	3.68	6.30	4-5	b^1G-x^3H^o (935)
*4579.344	V	(1)	3.68	6.37	4-5	b^1G-6° (936)
*4509.306	U	(1)	3.68	6.42	4-3	b^1G-u^3D^o (937)
4382.02	P	⊙	3.68	6.50	4-5	b^1G-w^3H^o (938)
4248.72	P	⊙?	3.68	6.58	4-4	b^1G-9° (939)
4189.564	U	(2)	3.68	6.62	4-3	b^1G-y^1F^o (940)
4171.696	J	(2)	3.68	6.64	4-3	b^1G-x^1F^o (941)
4149.49	P	⊙	3.68	6.65	4-3	b^1G-10° (942)
4090.75	P	⊙	3.68	6.70	4-4	b^1G-t^3G^o
4030.90	P	⊙	3.68	6.74	4-3	(943)
4080.08	P	⊙	3.68	6.70	4-4	b^1G-13° (944)
3996.968	J	2	3.68	6.77	4-4	b^1G-w^1G^o (945)
3885.93	P	⊙	3.68	6.85	4-5	b^1G-x^1H^o (946)
3846.29	P	⊙	3.68	6.89	4-3	b^1G-w^1F^o (947)
3829.125	J	(1)	3.68	6.90	4-5	b^1G-s^3G^o (948)
3754.89	P	⊙	3.68	6.97	4-4	b^1G-u^3H^o (949)
3731.15	P	⊙	3.68	6.99	4-4	b^1G-u^3F^o
3704.80	P	⊙	3.68	7.01	4-3	(950)
3681.87	W	(1)	3.68	7.03	4-4	b^1G-v^1G^o (951)
3661.25	P	⊙	3.68	7.05	4-5	b^1G-x^3I^o (952)
3590.66	W	(1)	3.68	7.13	4-3	b^1G-t^3F^o (953)
3291.44	P	⊙	3.68	7.43	4-4	b^1G-r^3G^o
3270.69	P	⊙	3.68	7.45	4-3	(954)
10452.70	D	5	3.86	5.05	4-3	z^3F^o-X (955)
8686.79	P	⊙	3.86	5.29	4-5	z^3F^o-e^7D
8801.78	P		3.93	5.33	3-4	(956)
7477.52	P	⊙	3.86	5.52	4-4	z^3F^o-e^5D
7541.61	U	(1)	3.93	5.56	3-3	(957)
7573.76	P	⊙	3.97	5.60	2-2	
7368.58	P	⊙	3.86	5.56	4-3	
7474.50	P	⊙	3.97	5.62	2-1	
7766.72	P	⊙	3.93	5.52	3-4	
6220.78	V	(1)	3.86	5.85	4-4	z^3F^o-e^5F
6419.65	P	⊙	3.93	5.85	3-4	(958)
6003.033	K	8	3.86	5.92	4-4	z^3F^o-e^3F
5976.799	K	5	3.93	5.99	3-3	(959)
5953.749	V	3	3.97	6.04	2-2	
5804.06	V	(1)	3.86	5.99	4-3	
5838.418	U	(1)	3.93	6.04	3-2	
6188.037	V	(2ld)	3.93	5.92	3-4	
6096.689	V	(1)	3.97	5.99	2-3	
5119.90	P	⊙	3.86	6.28	4-5	z^3F^o-e^7F
5027.51	P	⊙	3.86	6.32	4-4	(960)
5168.19	P	⊙	3.93	6.31	3-3	
5126.598	U	(1)	3.86	6.27	4-4	z^3F^o-f^7D
5285.60	P	(1)	3.97	6.30	2-1	(961)
5213.80	P	⊙	3.93	6.29	3-4	z^3F^o-e^5G
5238.25	P	⊙	3.97	6.32	2-3	(962)
5081.86	P	⊙	3.86	6.29	4-4	
Fe I continued						
5050.13	P	⊙	3.86	6.31	4-5	z^3F^o-f^5F
5085.93	P	⊙	3.93	6.35	3-4	(963)
5168.18	P	⊙	3.93	6.31	3-2	z^3F^o-e^5S (964)
5001.871	B	12	3.86	6.33	4-3	z^3F^o-e^3D
5014.950	J	10	3.93	6.39	3-2	(965)
5032.244	J	6	3.97	6.42	2-1	
5129.658	T	(1)	3.93	6.33	3-3	
5099.091	T	(1)	3.97	6.39	2-2	
5217.69	P	⊙	3.97	6.33	2-3	
4987.83	P	⊙	3.86	6.34	4-4	z^3F^o-g^5D
*5007.289	J	(3n)	3.93	6.39	3-3	(966)
5019.74	P	⊙	3.97	6.43	2-2	
4885.435	J	2	3.86	6.39	4-3	
4938.183	K	(2)	3.93	6.43	3-2	
4978.606	J	2	3.97	6.45	2-1	
5058.00	W	(1)	3.93	6.37	3-3	z^3F^o-e^7S (967)
4933.878	Q	(1)	3.93	6.43	3-2	z^3F^o-e^5P
5027.34	P	⊙	3.97	6.42	2-1	(968)
5015.30	P	⊙	3.97	6.43	2-2	
4630.785	U	(1)	3.93	6.59	3-4	z^3F^o-g^5F
*4607.655	J	3n	3.97	6.65	2-3	(969)
4526.40	P	⊙	3.86	6.59	4-4	
4538.84	W	(2)	3.93	6.65	3-3	
4438.53	P	⊙	3.86	6.65	4-3	
4452.62	P	⊙	3.93	6.70	3-2	
4493.693	V	(1n)	3.97	6.71	2-1	
*4575.80	U	(1)	3.86	6.56	4-4	z^3F^o-h^5D
4598.37	P	⊙	3.93	6.61	3-3	(970)
*4495.386	V	(1)	3.86	6.61	4-3	
4511.04	P	⊙	3.93	6.66	3-2	
4544.50	P	⊙	3.97	6.68	2-1	
4593.544	U	(1)	3.93	6.61	3-2	z^3F^o-f^5P
4587.72	P	⊙	3.97	6.66	2-1	(971)
4551.667	U	(1)	3.93	6.64	3-4	z^3F^o-f^5G
4538.58	P	⊙	3.97	6.69	2-3	(972)
4450.77	P	⊙	3.86	6.64	4-4	
4471.81	P	(1)	3.93	6.69	3-3	
4429.32	U	(1)	3.93	6.71	3-2	
4456.63	P		3.86	6.63	4-5	z^3F^o-e^3G
*4490.773	J	(3n)	3.93	6.67	3-4	(973)
4494.05	P	⊙	3.97	6.71	2-3	
4393.58	U	(1)	3.86	6.67	4-4	
4428.57	P	⊙	3.93	6.71	3-3	
4455.032	J	(3)	3.86	6.64	4-3	z^3F^o-f^3D
*4490.773	J	(3n)	3.93	6.67	3-2	(974)
4479.97	P	⊙	3.97	6.73	2-1	
*4556.129	J	4n	3.93	6.64	3-3	
*4558.108	J	(1)	3.97	6.67	2-2	
4625.44	P	⊙	3.97	6.64	2-3	
4354.28	P	⊙	3.86	6.70	4-5	z^3F^o-e^3H
4394.31	P	⊙	3.93	6.73	3-4	(975)
4300.21	P	⊙	3.86	6.73	4-4	
4276.684	J	(1)	3.86	6.75	4-4	z^3F^o-f^3F
4286.976	V	(1)	3.93	6.81	3-3	(976)
4300.828	V	(1)	3.97	6.84	2-2	
4197.38	P	⊙	3.86	6.81	4-3	
4369.73	P	⊙	3.93	6.75	3-4	
3975.85	W	(1)	3.86	6.97	4-	z^3F^o-2 (977)
3743.14	P	⊙	3.93	7.23	3-4	z^3F^o-g^5G
3673.68	P	⊙	3.86	7.23	4-4	(978)
3648.23	P	⊙	3.86	7.25	4-3	
10469.59	D	20	3.87	5.05	3-3	z^3D^o-X
10532.31	D	10	3.91	5.08	2-2	(979)
10143.59	P	⊙	3.87	5.08	3-2	
10884.30	D	3	3.91	5.05	2-3	
10818.36	D	3	3.94	5.08	1-2	
7486.13	P	⊙	3.87	5.52	3-4	z^3D^o-e^5D
7474.60	P	⊙	3.91	5.56	2-3	(980)
7325.33	P	⊙	3.91	5.60	2-2	
6226.77	V	(1)	3.87	5.85	3-4	z^3D^o-e^5F
6231.40	V	(1)	3.91	5.90	2-3	(981)
6209.73	P	⊙	3.94	5.93	1-2	
6083.67	P	⊙	3.87	5.90	3-3	
6114.41	P	⊙	3.91	5.93	2-2	
6008.577	K	9	3.87	5.92	3-4	z^3D^o-e^3F
5934.658	K	5	3.91	5.99	2-3	(982)
5883.838	K	4	3.94	6.04	1-2	
5809.249	V	(2)	3.87	5.99	3-3	
5798.194	V	(2)	3.91	6.04	2-2	
5678.38	P	⊙	3.87	6.04	3-2	
5304.11	P	(1)	3.91	6.24	2-3	z^3D^o-f^5D
5377.59	P	(1)	3.94	6.38	1-1	(983)
5005.720	J	10	3.87	6.33	3-3	z^3D^o-e^3D
4985.261	J	7	3.91	6.39	2-2	(984)
4973.108	J	3	3.94	6.42	1-1	
4896.437	U	(1)	3.87	6.39	3-2	
4911.786	U	(1)	3.91	6.42	2-1	
5098.594	K	(3)	3.91	6.33	2-3	
5048.454	V	(2)	3.94	6.39	1-2	
4977.653	U	(1)	3.91	6.39	2-3	z^3D^o-g^5D
4970.66	P	⊙	3.94	6.43	1-2	(985)
4889.113	U	(2)	3.87	6.39	3-3	
4909.387	J	(1)	3.91	6.43	2-2	
4930.331	K	(2)	3.94	6.45	1-1	
4870.05	P	⊙	3.91	6.45	2-1	
Fe I continued						
4905.15	W	(1)	3.91	6.43	2-2	z^3D^o-e^5P
4978.11	P	⊙	3.94	6.42	1-1	(986)
4916.67	P	⊙	3.91	6.42	2-1	
4966.30	P	⊙	3.94	6.43	1-2	
4589.562	V	(1)	3.87	6.59	3-4	z^3D^o-g^5F
4479.00	P	⊙	3.94	6.70	1-2	(987)
4441.56	P	⊙	3.87	6.65	3-3	
4429.20	P	⊙	3.91	6.70	2-2	
4358.95	P	⊙	3.87	6.70	3-2	
4404.10	P	⊙	3.91	6.71	2-1	
4579.05	P	⊙	3.87	6.56	3-4	z^3D^o-h^5D
4498.54	P	⊙	3.87	6.61	3-3	(988)
4487.01	P	⊙	3.91	6.66	2-2	
4504.23	P	⊙	3.94	6.68	1-1	
4568.62	P	⊙	3.91	6.61	2-2	z^3D^o-f^5P
4546.68	P	⊙	3.94	6.66	1-1	(989)
4621.63	P	⊙	3.94	6.61	1-2	
4377.330	U	(1)	3.87	6.69	3-3	z^3D^o-f^5G
4336.60	P	⊙	3.87	6.71	3-2	(990)
*4395.514	V	(1w)	3.87	6.67	3-4	z^3D^o-e^3G
4405.40	P	⊙	3.91	6.71	2-3	(991)
4335.89	U	(1)	3.87	6.71	3-3	
4458.101	V	(3)	3.87	6.64	3-3	z^3D^o-f^3D
4466.939	V	(2)	3.91	6.67	2-2	(992)
4440.840	V	(1)	3.94	6.72	1-1	
*4395.514	V	(1w)	3.87	6.67	3-2	
4391.87	P	⊙	3.91	6.72	2-1	
*4531.633	J	(2)	3.91	6.64	2-3	
4517.60	P	⊙	3.94	6.67	1-2	
4279.480	V	(1)	3.87	6.75	3-4	z^3D^o-f^3F
*4265.360	J	(2)	3.91	6.81	2-3	(993)
4264.743	U	(1)	3.94	6.84	1-2	
4200.09	P	⊙	3.87	6.81	3-3	
4243.786	V	(1w)	3.87	6.77	3-2	z^3D^o-e^3P
4220.05	P	⊙	3.91	6.84	2-1	(994)
4310.37	P	⊙	3.91	6.77	2-2	
*4265.360	J	(2)	3.94	6.84	1-1	
4357.53	P	⊙	3.94	6.77	1-2	
3839.614	V	(2w)	3.94	7.16	1-2	z^3D^o-i^5D (995)
3675.76	P	⊙	3.87	7.22	3-4	z^3D^o-g^5G
3699.41	P	⊙	3.91	7.25	2-3	(996)
3683.77	P	⊙	3.91	7.26	2-2	
3717.73	P	⊙	3.87	7.19	3-2	z^3D^o-4 (997)
9959.18	P	⊙	4.06	5.30	4-5	c^3F-y^5G^o (998)
8096.874	E	10	4.06	5.58	4-3	c^3F-x^3D^o
8422.95	O	2	4.12	5.59	3-2	(999)
8481.96	P	⊙	4.17	5.62	2-1	
8466.54	P	⊙	4.12	5.58	3-3	
8680.77	P	⊙	4.17	5.59	2-2	
8737.10	P	⊙	4.17	5.58	2-3	
7537.44	P	⊙?	4.06	5.70	4-3	c^3F-w^5P^o
7967.03	P	⊙?	4.17	5.72	2-2	(1000)
7319.686	I	5	4.06	5.77	4-4	c^3F-u^5D^o
7498.56	V	1	4.12	5.77	3-3	(1001)
7617.97	P	⊙	4.17	5.79	2-2	
7207.123	V	6	4.06	5.77	4-3	
7418.674	E	5	4.12	5.79	3-2	
7454.02	V	(1)	4.17	5.82	2-1	
7512.17	P	⊙	4.12	5.77	3-4	
7132.989	I	8	4.06	5.79	4-4	c^3F-x^3F^o
*7307.938§	L	8	4.12	5.81	3-3	(1002)
7443.031	L	2	4.17	5.83	2-2	
7418.32	P	⊙	4.12	5.79	3-4	
7501.25	P	⊙	4.17	5.81	2-3	
7072.82	P	⊙	4.06	5.80	4-5	c^3F-z^3H^o
7300.59	P	⊙	4.12	5.82	3-4	(1003)
7024.084	V	5	4.06	5.82	4-4	
7068.415	I	40	4.06	5.80	4-3	c^3F-w^3D^o
7284.843	L	4	4.12	5.82	3-2	(1004)
7401.689	E	4	4.17	5.84	2-1	
7348.51	P	⊙	4.12	5.80	3-3	
7476.92	P	⊙	4.17	5.82	2-2	
6793.36	V	2	4.06	5.87	4-4	c^3F-w^5G^o
7000.633	V	3	4.12	5.89	3-3	(1005)
7107.461	I	4	4.17	5.90	2-2	
6745.96	P	⊙	4.06	5.89	4-3	
*6933.628	L	6	4.12	5.90	3-2	
6857.25	V	4	4.06	5.86	4-4	c^3F-z^1G^o
7120.56	P	⊙	4.12	5.86	3-4	(1006)
6785.88	P	⊙	4.06	5.88	4-5	c^3F-v^5F^o
6963.02	P	⊙	4.17	5.94	2-3	(1007)
6839.90	P	(2)	4.06	5.93	4-4	
6796.11	V	2	4.12	5.94	3-3	
6555.87	P	⊙	4.06	5.94	4-3	
6682.33	P	⊙	4.06	5.91	4-5	c^3F-x^3G^o
6942.82	P	⊙	4.12	5.90	3-4	(1008)
7105.90	P	⊙	4.17	5.91	2-3	
6623.78	P	⊙	4.06	5.92	4-3	c^3F-v^5P^o
*6777.44	V	1	4.12	5.95	3-2	(1010)
6509.56	V	(1)	4.06	5.95	4-5	c^3F-w^3G^o (1011)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
•6713.14	V	6d	4.12	5.96	3-2	c^3F-x^3P^o
•6777.44	V	1	4.17	5.99	2-1	(1013)
6875.98	V	1	4.17	5.96	2-2	
6315.814	V	(2)	4.06	6.01	4-4	c^3F-y^1G^o (1014)
6157.734	J	4	4.06	6.06	4-4	c^3F-w^3F^o
6315.316	J	(3)	4.12	6.08	3-3	(1015)
6380.748	I	3	4.17	6.10	2-2	
6107.32	P	⊙	4.06	6.08	4-3	
6240.366	U	(1)	4.12	6.10	3-2	
6147.85	V	(-)	4.06	6.07	4-3	c^3F-v^3D^o
6315.42	P	⊙	4.12	6.08	3-2	(1016)
6436.43	V	(1)	4.17	6.09	2-1	
•5975.355	J	4	4.06	6.12	4-5	c^3F-y^3H^o
•6137.913	J	(2)	4.12	6.14	3-4	(1017)
5931.89	P	⊙	4.06	6.14	4-4	
6027.057	B	4	4.06	6.11	4-5	c^3F-w^3G^o
6165.366	J	(2)	4.12	6.13	3-4	(1018)
6215.152	J	(2)	4.17	6.15	2-3	
6081.85	P	⊙	4.12	6.15	3-3	
6362.889	V	(2)	4.17	6.11	2-2	c^3F-z^1D^o (1019)
5959.878	U	(1)	4.12	6.20	3-2	c^5F-w^3P^o (1020)
5643.94	P	⊙	4.06	6.24	4-3	c^3F-z^1F^o
5943.11	P	⊙	4.17	6.24	2-3	(1021)
5811.93	V	(1)	4.12	6.25	3-4	c^3F-x^1G^o (1022)
5510.23	P	⊙	4.06	6.30	4-5	c^3F-u^5F^o
5563.69	P	⊙	4.12	6.34	3-4	(1023)
5333.15	P	⊙	4.06	6.37	4-3	
5494.468	V	(1)	4.06	6.30	4-5	c^3F-x^3H^o (1024)
5487.747	K	(8)	4.12	6.37	3-2	c^3F-t^5D^o (1025)
m5434.15	P	Fe	4.06	6.33	4-4	c^5F-v^5F^o
5568.71	P	⊙	4.12	6.34	3-3	(1026)
5406.36	P	⊙	4.06	6.34	4-3	
•5620.04	W	(1)	4.12	6.32	3-2	
5587.582	V	(1)	4.12	6.33	3-4	
5680.26	W	(1)	4.17	6.34	2-3	
5329.994	J	(2)	4.06	6.37	4-5	c^3F-6° (1038)
5403.823	V	(1)	4.06	6.34	4-5	c^3F-u^3G^o
5476.298	J	(2)	4.12	6.38	3-4	(1039)
•5535.419	J	(2)	4.17	6.40	2-3	
5319.22	P	⊙	4.06	6.38	4-4	
5429.43	P	⊙	4.12	6.40	3-3	
5375.00	W	(1n)	4.06	6.40	4-3	
5464.286	V	(1)	4.12	6.38	3-2	c^3F-y^1D^o (1030)
•5235.392	V	(2)	4.06	6.42	4-3	c^3F-u^3D^o
5293.973	V	(1)	4.12	6.46	3-2	(1031)
5332.673	V	(1)	4.17	6.48	2-1	
5387.51	R	3	4.12	6.42	3-3	
5394.682	T	(-)	4.17	6.46	2-2	
5491.84	W	(2)	4.17	6.42	2-3	
5169.30	P	⊙	4.06	6.45	4-3	c^3F-t^3D^o
5187.932	V	(2)	4.12	6.50	3-2	(1032)
5428.71	P	⊙	4.17	6.44	2-1?	
5317.53	P	⊙	4.12	6.45	3-3	
5284.62	P	⊙	4.17	6.50	2-2	
5164.932	S	(-)	4.12	6.51	3-4	c^3F-w^3H^o (1033)
5236.189	V	(1)	4.17	6.53	2-1	c^3F-8° (1034)
4978.70	P	⊙	4.06	6.54	4-3	c^3F-s^3D^o
5124.17	P	(1)	4.17	6.58	2-2	(1035)
5136.09	W	(1)	4.17	6.57	2-1	c^3F-z^1P^o (1036)
4887.37	P	⊙	4.06	6.58	4-4	c^3F-9° (1037)
4829.68	P	⊙?	4.12	6.68	3-2	c^3F-t^5P^o
4875.32	P	⊙	4.17	6.70	2-1	(1038)
4809.26	P	(1)	4.06	6.62	4-3	c^3F-y^1F^o (1039)
4912.52	P	⊙?	4.12	6.64	3-3	c^3F-x^1F^o
4999.114	T	(1)	4.17	6.64	2-3	(1040)
•4881.726	J	(2)	4.12	6.65	3-3	c^3F-10° (1041)
4735.846	J	(2)	4.06	6.66	4-5	c^3F-t^3G^o
4800.652	J	(2)	4.12	6.70	3-4	(1042)
4798.269	V	(1)	4.17	6.74	2-3	
4854.89	V	(1n)	4.12	6.67	3-3	c^3F-11°
4939.46	P	⊙	4.17	6.67	2-3	(1043)
4729.028	J	(1)	4.06	6.67	4-5	c^3F-12° (1043a)
4785.963	V	(1)	4.12	6.70	3-4	c^3F-13°
4665.56	P	⊙	4.06	6.70	4-4	(1044)
4672.02	P	⊙	4.12	6.77	3-4	c^3F-w^1G^o (1045)
4413.40	P	⊙	4.06	6.85	4-5	c^3F-x^1H^o (1046)
4546.47	P	⊙	4.17	6.88	2-2	c^3F-w^1D^o (1047)
4467.446	U	(1)	4.12	6.89	3-3	c^3F-w^1F^o
4538.95	P	⊙	4.17	6.89	2-3	(1048)
4152.07	P	⊙	4.06	7.03	4-4	c^3F-v^1G^o (1049)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
8632.42	P	⊙	4.09	5.53	4-4	y^5D^o-e^5D
8653.50	P	⊙	4.14	5.56	3-3	(1050)
8355.16	P	⊙	4.09	5.56	4-3	
8950.30	P	⊙	4.14	5.53	3-4	
8878.76	P	⊙	4.17	5.56	2-3	
8834.04	P	⊙	4.20	5.60	1-2	
8779.13	P	⊙	4.21	5.62	0-1	
7187.341	E	800	4.09	5.80	4-5	y^5D^o-e^5F
7207.406	E	500	4.14	5.85	3-4	(1051)
7164.469	E	350	4.17	5.90	2-3	
7130.942	I	150	4.20	5.93	1-2	
7090.404	I	40	4.21	5.95	0-1	
6999.902	I	30	4.09	5.85	4-4	
7016.436	V	60	4.14	5.90	3-3	
7022.976	L	50	4.17	5.93	2-2	
7038.251	I	40	4.20	5.95	1-1	
6819.60	P	(1)	4.09	5.90	4-3	
6880.65	V	2	4.14	5.93	3-2	
6933.04	U	1	4.17	5.95	2-1	
6725.39	V	2	4.09	5.92	4-4	y^5D^o-e^3F
6653.88	V	(1)	4.14	5.99	3-3	(1052)
6916.703	I	60	4.14	5.92	3-4	
6786.88	V	5	4.17	5.99	2-3	
6704.48	P	(1)	4.20	6.04	1-2	
•5666.837	U	(1)	4.14	6.31	3-3	y^5D^o-e^7F
5703.09	P	⊙	4.17	6.34	2-2	(1053)
5815.42	P	⊙	4.20	6.32	1-1	
5737.71 ?	W	(1)	4.09	6.31	4-3	
5859.96	P	⊙	4.17	6.28	2-3	y^5D^o-f^7D
5760.53	P	⊙	4.14	6.28	3-3	(1054)
5813.33	P	⊙	4.17	6.30	2-2	
5715.47	P	⊙	4.14	6.30	3-2	
5796.67	P	⊙	4.17	6.30	2-1	
5871.289	U	(1)	4.14	6.24	3-3	y^5D^o-f^5D
5928.50	P	⊙	4.20	6.28	1-1	(1055)
5732.86	P	⊙	4.09	6.24	4-3	
5815.16	V	(1)	4.14	6.26	3-2?	
5893.34	P	⊙	4.20	6.29	1-0	
5974.62	P	⊙	4.17	6.24	2-3	
5844.879	U	(1)	4.14	6.25	3-3	y^5D^o-e^7P
5707.70	P	⊙	4.09	6.25	4-3	(1056)
5760.71	P	⊙	4.14	6.28	3-2	
5947.30	P	⊙	4.17	6.25	2-3	
5677.68	P	⊙	4.09	6.26	4-5	y^5D^o-e^5G
5731.70	P	⊙	4.14	6.29	3-4	(1057)
5739.78	P	⊙	4.17	6.32	2-3	
5761.08	P	⊙	4.20	6.34	1-2	
5644.35	P	⊙	4.14	6.32	3-3	
5516.89	P	⊙	4.09	6.32	4-3	
5607.66	P	⊙	4.14	6.34	3-4	y^5D^o-e^7G
5705.32	P	⊙	4.20	6.36	1-2	(1058)
5481.252	V	(2)	4.09	6.34	4-4	
5568.44	P	⊙	4.14	6.35	3-3	
5636.00	P	⊙	4.17	6.36	2-2	
5551.77	P	⊙	4.09	6.31	4-5	y^5D^o-f^5F
5568.07	P	⊙	4.14	6.35	3-4	(1059)
5652.01	P	⊙	4.20	6.38	1-2	
5443.41	P	⊙	4.09	6.35	4-4	
5524.35	P	(1)	4.14	6.37	3-3	
5583.97	P	⊙	4.17	6.38	2-2	
•5666.837	U	(1)	4.14	6.31	3-2	y^5D^o-e^5S (1060)
5493.508	V	(1)	4.09	6.33	4-3	y^5D^o-e^3D
5483.111	V	(1)	4.14	6.39	3-2	(1061)
5481.451	T	(3)	4.17	6.42	2-1	
5620.527	V	(1)	4.14	6.33	3-3	
5573.10	V	(1)	4.17	6.39	2-2	
5547.00	W	(2)	4.20	6.42	1-1	
•5715.107	V	(1)	4.17	6.33	2-3	
5579.34	P	⊙	4.21	6.42	0-1	
5476.571	J	10	4.09	6.34	4-4	y^5D^o-g^5D
5473.908	J	(3)	4.14	6.39	3-3	(1062)
5478.48	V	(1)	4.17	6.43	2-2	
•5493.850	T	(0)	4.20	6.45	1-1	
5353.386	V	(2)	4.09	6.39	4-3	
5391.493	V	(1)	4.14	6.43	3-2	
5429.52	P	⊙	4.17	6.45	2-1	
5480.872	V	(2)	4.20	6.45	1-0	
5602.788	V	(2)	4.14	6.34	3-4	
5563.604	I	3	4.17	6.39	2-3	
5543.930	J	(2)	4.20	6.43	1-2	
5525.552	V	(3)	4.21	6.45	0-1	
•5534.68	W	(1)	4.14	6.37	3-3	y^5D^o-e^7S (1063)
5334.32	P	⊙	4.09	6.40	4-3	y^5D^o-e^5P
5386.341	V	(1)	4.14	6.43	3-2	(1064)
5487.52	P	⊙	4.17	6.42	2-1	
5453.98	P	⊙	4.14	6.40	3-3	
5473.18	P	⊙	4.17	6.43	2-2	
5553.22	P	⊙	4.20	6.42	1-1	
5543.03	P	⊙	4.17	6.40	2-3	
•5538.54	V	(1)	4.20	6.43	1-2	
•5007.289	J	(3n)	4.09	6.55	4-5	y^5D^o-g^5F
5027.136	J	5n	4.14	6.59	3-4	(1065)
4991.277	J	(3)	4.17	6.65	2-3	
•4939.244	J	(2)	4.20	6.70	1-2	
4933.348	K	(3n)	4.21	6.71	0-1	
4925.28	W	(1)	4.09	6.59	4-4	
4887.189	K	(-)	4.17	6.70	2-2	
4983.855	J	6n	4.09	6.56	4-4	y^5D^o-h^5D
4988.963	J	(6)	4.14	6.61	3-3	(1066)
4957.68	P	⊙	4.17	6.66	2-2	
4969.937	J	(3)	4.20	6.68	1-1	
4888.651	V	(1)	4.09	6.61	4-3	
4886.335	J	(1)	4.14	6.66	3-2	
4917.25	W	(1)	4.17	6.68	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5088.16	P	(1)	4.14	6.56	3-4	y^5D^o-h^5D
5063.296	T	(-)	4.17	6.61	2-3?	(1066)
5011.24	P	⊙	4.20	6.66	1-2	cont
4982.507	J	8n	4.09	6.56	4-3	y^5D^o-f^5P
4983.358	J	5n	4.14	6.61	3-2	(1067)
4967.899	J	(3)	4.17	6.66	2-1	
5086.77	P	⊙	4.14	6.56	3-3	
•5057.49	W	(1)	4.17	6.61	2-2	
5021.68	P	⊙	4.20	6.66	1-1	
•4953.646	V	(1n)	4.09	6.58	4-5	y^5D^o-f^5G
4934.023	K	(3n)	4.14	6.64	3-4	(1068)
4910.328	J	(1w)	4.17	6.69	2-3	
4910.570	J	(1w)	4.20	6.71	1-2	
4835.863	K	(3)	4.09	6.64	4-4	
4840.329	V	(1n)	4.14	6.69	3-3	
4859.13	W	(1)	4.17	6.71	2-2	
•4745.806	B	3n	4.09	6.69	4-3	
4790.56	P	⊙	4.14	6.71	3-2	
4843.78	V	(1)	4.09	6.63	4-5	y^5D^o-e^3G
4862.60	P	⊙	4.14	6.67	3-4	(1069)
4858.24	P	⊙	4.17	6.71	2-3	
m4840.89	P	T1	4.09	6.64	4-3	y^5D^o-f^3D
4862.54	P	⊙	4.14	6.67	3-2	(1070)
4841.80	W	(1)	4.17	6.72	2-1	
•4939.244	J	(2)	4.14	6.64	3-3	
4933.19	P	⊙	4.17	6.67	2-2	
4892.86	W	(1)	4.20	6.72	1-1	
5012.16	P	⊙	4.17	6.64	2-3	
4986.24	W	(1)	4.20	6.67	1-2	
4918.03	W	(1)	4.21	6.72	0-1	
4631.03	P	⊙	4.09	6.75	4-4	y^5D^o-f^3F
4538.20	P	⊙	4.09	6.81	4-3	(1071)
•4730.997	J	(1)	4.14	6.75	3-4	
4688.38	P	⊙	4.17	6.81	2-3	
4679.96	P	⊙	4.20	6.84	1-2	
4677.59	P	⊙	4.14	6.77	3-2	y^5D^o-e^3P
4742.93	P	⊙	4.17	6.77	2-2	(1072)
4135.77	U	(1)	4.17	7.16	2-2	y^5D^o-i^5D
4044.49	P	⊙	4.09	7.14	4-3	(1073)
4085.98	W	(1)	4.14	7.16	3-2	
4163.35	P	⊙	4.17	7.14	2-3	
4172.97	P	⊙	4.20	7.16	1-2	
3970.99	P	⊙	4.09	7.19	4-5	y^5D^o-g^5G
3996.79	P	⊙	4.14	7.22	3-4	(1074)
4046.46	P	⊙	4.14	7.19	3-2	y^5D^o-4
4095.27	P	⊙	4.17	7.19	2-2	(1075)
4131.75	P	⊙	4.20	7.19	1-2	
9103.64	F	1	4.16	5.52	5-4	y^5F^o-e^5D
•9070.42	F	2	4.20	5.56	4-3	(1076)
9084.20	P	1	4.24	5.60	3-2	
7511.045	E	800	4.16	5.80	5-5	y^5F^o-e^5F
7495.088	E	400	4.20	5.85	4-4	(1077)
7445.776	E	200	4.24	5.90	3-3	
7411.178	E	100	4.26	5.93	2-2	
7389.425	E	80	4.28	5.95	1-1	
7306.61	V	3	4.16	5.85	5-4	
7288.760	I	10	4.20	5.90	4-3	
7293.068	I	15	4.24	5.93	3-2	
7311.101	I	12	4.26	5.95	2-1	
7710.390	E	25	4.20	5.80	4-5	
7661.323	E	30	4.24	5.85	3-4	
7568.925	E	30	4.26	5.90	2-3	
7491.678	L	12	4.28	5.93	1-2	
7008.014	V	5	4.16	5.92	5-4	y^5F^o-e^3F
6898.31	V	3	4.20	5.99	4-3	(1078)
6847.60	P	(1)	4.24	6.04	3-2	
7181.222	L	10	4.20	5.92	4-4	
7038.818	V	2	4.24	5.99	3-3	
6951.62	P	(1)	4.26	6.04	2-2	
7333.62	V	1n	4.24	5.92	3-4	
•7148.69	R	(-)	4.26	5.99	2-3	
7022.39	P	⊙	4.28	6.04	1-2	
•6005.53	V	(1)	4.16	6.21	5-6	y^5F^o-e^7F
•6021.82	W	(2n)	4.26	6.31	2-3	(1079)
6008.35	P	⊙	4.28	6.34	1-2	
5992.65	P	⊙?	4.16	6.22	5-5	y^5F^o-f^7D
5961.91	P	⊙	4.20	6.27	4-4	(1080)
6060.81	P	⊙	4.20	6.24	4-3	y^5F^o-f^5D
6107.09	P	(1)	4.24	6.26	3-2	(1081)
6032.67	V	(1)	4.20	6.25	4-3	y^5F^o-e^7P
•6137.913	J	(2)	4.26	6.28	2-2	(1082)
5940.972	V	(2)	4.16	6.24	5-6	y^5F^o-e^5G
5996.49	P	⊙	4.26	6.32	2-3	(1083)
5877.770	U	(1)	4.16	6.26	5-5	
5901.53	P	⊙	4.20	6.29	4-4	
5918.93	P	(1)	4.24	6.32	3-3	
5742.95	P	(1)	4.16	6.31	5-5	y^5F^o-f^5F
5738.22	P	⊙	4.20	6.35	4-4	(1084)
5786.99	P	⊙	4.24	6.37	3-3	
5826.64	P	⊙	4.26	6.38	2-2	
5859.20	V	(1)	4.28	6.39	1-1	
5627.08	P	⊙	4.16	6.35	5-4	
5691.69	P	⊙	4.20	6.37	4-3	
5753.38	P	⊙	4.24	6.38	3-2	
5809.88	P	⊙	4.26	6.39	2-1	
5858.77	P	⊙	4.20	6.31	4-5	
5835.10	P	⊙	4.24	6.35	3-4	
5861.11	P	⊙	4.26	6.37	2-3	
5876.27	P	⊙	4.28	6.38	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5943.62	P	⊙	4.24	6.31	3-2	y^5F^o-e^5S
*6021.82	W	(2n)	4.26	6.31	2-2	(1085)
5793.932	V	(2)	4.20	6.33	4-3	y^5F^o-e^3D
5741.861	V	(2)	4.24	6.39	3-2	(1086)
*5715.107	V	(1)	4.26	6.42	2-1	
5892.71	W	(2)	4.24	6.33	3-3	
5814.80	V	(1)	4.26	6.39	2-2	
5762.84	P	⊙	4.28	6.42	1-1	
5969.554	U	(2)	4.26	6.33	2-3	
5864.24	P	(1)	4.28	6.39	1-2	
5662.525	B	6	4.16	6.34	5-4	y^5F^o-g^5D
5638.266	I	3	4.20	6.39	4-3	(1087)
5641.464	V	(2)	4.24	6.43	3-2	
5658.67	P	⊙	4.26	6.45	2-1	
5691.509	V	(1)	4.28	6.45	1-0	
5775.090	J	(5)	4.20	6.34	4-4	
5731.771	J	(3)	4.24	6.39	3-3	
5711.867	V	(2)	4.26	6.43	2-2	
5705.48	V	(1)	4.28	6.45	1-1	
5873.211	V	(2)	4.24	6.34	3-4	
5804.478	U	(1)	4.26	6.39	2-3	
*5759.56	P	(2)	4.28	6.43	1-2	
5617.14	P	⊙	4.20	6.40	4-3	y^5F^o-e^5P
5635.85	V	(1)	4.24	6.43	3-2	(1088)
5721.71	P	⊙	4.26	6.42	2-1	
5709.93	P	⊙	4.24	6.40	3-3	
5706.11	P	⊙	4.26	6.43	2-2	
5162.288	J	10n	4.16	6.55	5-5	y^5F^o-g^5F
5165.422	J	(4)	4.20	6.59	4-4	(1089)
5126.218	T	(1)	4.24	6.65	3-3	
5072.077	K	(1)	4.26	6.70	2-2	
5076.288	T	(2)	4.28	6.71	1-1	
5075.17	P	⊙	4.16	6.59	5-4	
5051.29	P	⊙	4.20	6.65	4-3	
5016.48	P	⊙	4.24	6.70	3-2	
5255.68	P	⊙	4.20	6.55	4-5	
5243.798	V	(1)	4.24	6.59	3-4	
5184.292	U	(3n)	4.26	6.65	2-3	
5109.662	V	(2)	4.28	6.70	1-2	
5137.388	J	6n	4.16	6.56	5-4	y^5F^o-h^5D
5125.130	J	6n	4.20	6.61	4-3	(1090)
5090.787	K	(6n)	4.24	6.66	3-2	
5104.47	P	(1)	4.26	6.68	2-1	
*5229.857	J	5n	4.20	6.56	4-4	
5202.27 ?	W	(1)	4.24	6.61	3-3	
5148.061	V	(3)	4.26	6.66	2-2	
*5142.541	J	(3w)	4.28	6.68	1-1	
5228.408	V	(1n)	4.20	6.56	4-3	y^5F^o-f^5P
5196.100	V	(2w)	4.24	6.61	3-2	(1091)
5159.066	V	(2w)	4.26	6.66	2-1	
5308.71	P	⊙	4.24	6.56	3-3	
5255.76	P	⊙	4.26	6.61	2-2	
5197.93	P	⊙	4.28	6.66	1-1	
5133.692	J	20n	4.16	6.56	5-6	y^5F^o-f^5G
5195.471	K	(8)	4.20	6.58	4-5	(1092)
*5142.541	J	(3w)	4.24	6.64	3-4	
5096.998	J	(6)	4.26	6.69	2-3	
5079.002	V	(1n)	4.28	6.71	1-2	
5104.21	U	(1)	4.16	6.58	5-5	
5067.162	V	(1)	4.20	6.64	4-4	
*5040.902	V	(2)	4.24	6.69	3-3	
4986.90	P	⊙	4.24	6.71	3-2	
5085.68	P	⊙	4.16	6.59	5-6	y^5F^o-e^5H
5040.25	P	⊙	4.20	6.65	4-5	(1093)
5021.60	P	⊙	4.24	6.70	3-4	
5012.68	P	⊙	4.26	6.73	2-3	
4954.30	P	⊙	4.16	6.65	5-5	
4866.77	P	⊙?	4.16	6.70	5-4	
4987.62	P	⊙	4.16	6.63	5-5	y^5F^o-e^3G
4991.86	P	⊙	4.20	6.67	4-4	(1094)
4985.98	P	⊙	4.24	6.71	3-3	
5074.757	J	10n	4.20	6.63	4-5	
5065.020	J	6n	4.24	6.67	3-4	
*5040.902	V	(2)	4.26	6.71	2-3	
5072.690	T	(1)	4.20	6.64	4-3	y^5F^o-f^3D
5064.95	P	⊙	4.24	6.67	3-2	(1095)
5023.226	T	(-)	4.26	6.72	2-1	
5148.234	U	(3)	4.24	6.64	3-3	
5121.646	V	(2n)	4.26	6.67	2-2	
*5060.079	T	(1)	4.28	6.72	1-1	
5206.80	P	⊙	4.26	6.64	2-3	
5159.95	P	⊙	4.28	6.67	1-2	
4972.39	P	(1)	4.16	6.64	5-5	y^5F^o-g^7D
4893.59	P	⊙	4.16	6.68	5-4	(1096)
4906.80	P	⊙	4.20	6.72	4-3	
4962.564	U	(1)	4.16	6.65	5-6	y^5F^o-e^3H
4942.59	P	⊙	4.24	6.73	3-4	(1097)
4872.91	P	⊙	4.20	6.73	4-4	
4749.25	P	⊙	4.24	6.84	3-2	y^5F^o-f^3F
4842.71	P	⊙	4.20	6.75	4-4	(1098)
*4807.343	S	(-)	4.24	6.81	3-3	
4799.06	P	⊙	4.26	6.84	2-2	
4911.52	P	⊙	4.24	6.75	3-4	
4858.27	P	⊙	4.26	6.81	2-3	
*4832.734	J	(2)	4.28	6.84	1-2	
4465.33	P	(1)	4.20	6.97	4-5	y^5F^o-1 (1099)
4460.55	P	⊙?	4.20	6.97	4-	y^5F^o-2 (1100)
4384.13	P	⊙?	4.20	7.03	4-4	y^5F^o-3 (1101)
4225.71	P	⊙	4.20	7.13	4-4	y^5F^o-1^5D
4256.79	U	(1)	4.24	7.14	3-3	(1102)
4278.01	P	⊙	4.24	7.13	3-4	
Fe I continued						
4112.972	J	3n	4.16	7.16	5-6	y^5F^o-g^5G
4125.622	J	(1)	4.20	7.19	4-5	(1103)
4132.54	P	⊙	4.24	7.22	3-4	
4137.42	P	⊙	4.26	7.25	2-3	
4142.628	V	(1N)	4.28	7.26	1-2	
4067.85	P	⊙	4.16	7.19	5-5	
4083.71	P		4.20	7.22	4-4	
4100.35	P	⊙	4.24	7.25	3-3	
*4117.872	V	(1)	4.26	7.26	2-2	
4185.66	P	⊙	4.24	7.19	3-2	y^5F^o-4
4224.30	P	⊙	4.26	7.19	2-2	(1104)
7239.885	I	6	4.19	5.90	2-3	z^3P^o-e^5F
7311.26	P	⊙	4.24	5.93	1-2	(1105)
7095.425	I	3	4.19	5.93	2-2	
7213.84	P	⊙	4.24	5.95	1-1	
5955.682	U	(1)	4.24	6.31	1-2	z^3P^o-e^5S (1106)
5762.992	K	10	4.19	6.33	2-3	z^3P^o-e^3D
5753.136	J	5	4.24	6.39	1-2	(1107)
5717.845	L	(3)	4.27	6.42	0-1	
5618.646	V	(1)	4.19	6.39	2-2	
*5655.506	V	4	4.24	6.42	1-1	
m5525.48	P	Fe	4.19	6.42	2-1	
5608.98	P	⊙	4.19	6.39	2-3	z^3P^o-g^5D
5652.32	V	(1)	4.24	6.43	1-2	(1108)
5661.36	W	(1)	4.27	6.45	0-1	
5522.46	V	(2)	4.19	6.43	2-2	
*5600.242	V	(1)	4.24	6.45	1-1	
5473.730	V	(1)	4.19	6.45	2-1	
5588.07	P		4.19	6.40	2-3	z^3P^o-e^5P
5646.70	P	⊙	4.24	6.43	1-2	(1109)
5724.445	U	(1)	4.27	6.42	0-1	
5517.08	W	(1n)	4.19	6.43	2-2	
5661.97	P	⊙	4.24	6.42	1-1	
5027.785	T	(-)	4.19	6.65	2-3	z^3P^o-g^5F
5025.08	P	⊙	4.24	6.70	1-2	(1110)
5041.33	P	⊙	4.27	6.71	0-1	
4922.18	P	⊙	4.19	6.70	2-2	
4992.80	P	⊙	4.24	6.71	1-1	
4993.687	U	(1)	4.19	6.66	2-3	z^3P^o-h^5D
5056.856	U	(1)	4.24	6.68	1-1	(1111)
*4952.646	V	(1n)	4.19	6.68	2-1	
5205.31	P	⊙	4.24	6.61	1-2	z^3P^o-f^5P
5004.034	T	(1)	4.19	6.66	2-1	(1112)
4945.65	W	(1)	4.19	6.69	2-3	z^3P^o-f^5G
4995.41	P	⊙	4.24	6.71	1-2	(1113)
4893.70	P	⊙	4.19	6.71	2-2	
4730.56	P	⊙?	4.19	6.81	2-3	z^3P^o-f^3F (1114)
4775.87	P		4.19	6.77	2-2	z^3P^o-e^3P
*4757.582	J	(2)	4.24	6.84	1-1	(1115)
4665.24	P	⊙	4.19	6.84	2-1	
4873.69	P	⊙	4.24	6.77	1-2	
4801.63	P	⊙	4.27	6.84	0-1	
4160.78	P	⊙	4.19	7.16	2-2	z^3P^o-1^5D (1116)
8356.07	P	⊙	4.28	5.75	2-1	b^1D-z^3s^o (1117)
7820.80	P	⊙	4.28	5.85	2-2	b^1D-1^o (1118)
6756.56	P	⊙	4.28	6.10	2-2	b^1D-w^3F^o (1120)
6571.22	U	(1)	4.28	6.15	2-3	b^1D-v^3G^o (1121)
6736.56	P	⊙	4.28	6.11	2-2	b^1D-z^1p^o (1122)
6267.845	U	(1)	4.28	6.24	2-3	b^1D-z^1F^o (1123)
5883.06	P	⊙?	4.28	6.37	2-2	b^1D-t^5p^o (1124)
6035.34	P	⊙?	4.28	6.32	2-2	b^1D-v^3F^o
5976.18	P	⊙	4.28	6.34	2-3	(1125)
5816.07	P	⊙?	4.28	6.40	2-3	b^1D-u^3G^o (1127)
5856.084	V	(2)	4.28	6.38	2-2	b^1D-y^1p^o (1128)
5837.709	V	(1)	4.28	6.39	2-2	b^1D-x^1p^o (1129)
5539.831	U	(1)	4.28	6.50	2-2	b^1D-t^3p^o
5698.37	W	(2)	4.28	6.44	2-1	(1130)
5469.09	P	⊙	4.28	6.53	2-2	b^1D-v^3p^o (1131)
5376.849	U	(2)	4.28	6.57	2-1	b^1D-z^1p^o (1132)
4734.100	J	(1)	4.28	6.88	2-2	b^1D-w^1p^o (1133)
4725.94	V	(1n)	4.28	6.89	2-3	b^1D-w^1F^o (1134)
4333.06	P	⊙	4.28	7.12	2-2	b^1D-t^3F^o (1135)
8220.406	E	1500	4.30	5.80	6-5	z^5G^o-e^5F
7937.166	E	700	4.29	5.85	5-4	(1136)
7998.972	E	700	4.35	5.90	4-3	
8046.073	E	600	4.40	5.93	3-2	
8085.200	E	500	4.43	5.95	2-1	
8179.03	O	(1)	4.29	5.80	5-5	
8248.151	E	30	4.35	5.85	4-4	
8232.347	E	50	4.40	5.90	3-3	
8207.767	E	40	4.43	5.93	2-2	
Fe I continued						
8509.63	P	⊙	4.35	5.80	4-5	z^5G^o-e^5F
8496.51	P	⊙	4.40	5.85	3-4	(1136)
8401.68	P	⊙	4.43	5.90	2-3	cont
7586.044	E	150	4.29	5.92	5-4	z^5G^o-e^3F
7531.171	E	60	4.35	5.99	4-3	(1137)
7507.300	L	8	4.40	6.04	3-2	
7869.65	O	4	4.35	5.92	4-4	
7737.67	P	⊙	4.40	5.99	3-3	
7647.83	P	⊙	4.43	6.04	2-2	
6428.80	V	(1)	4.35	6.27	4-4	z^5G^o-f^7D (1138)
6543.98	U	(1)	4.35	6.24	4-3	z^5G^o-f^5D (1139)
6376.22	P	⊙	4.30	6.24	6-6	z^5G^o-e^5G
6303.46	V	(1n)	4.30	6.26	6-5	(1140)
6351.29	P	⊙	4.29	6.24	5-6	
6472.15	P	⊙?	4.35	6.26	4-5	
6148.65	P	⊙	4.30	6.31	6-5	z^5G^o-f^5F (1141)
6034.04	P	(2)	4.29	6.34	5-4	z^5G^o-g^5D
6054.100	U	(2)	4.35	6.39	4-3	(1142)
6081.72	P	⊙	4.40	6.43	3-2	
6212.04	V	(1)	4.35	6.34	4-4	
5361.637	U	(1)	4.40	6.70	3-2	z^5G^o-g^5F
5395.25	W	(1n)	4.43	6.71	2-1	(1143)
5469.29	P	⊙	4.29	6.55	5-5	
5512.277	V	(1)	4.35	6.59	4-4	
5487.16	V	(1)	4.40	6.65	3-3	
5432.950	U	(2n)	4.43	6.70	2-2	
5615.18	P	⊙	4.35	6.55	4-5	
5441.321	U	(1)	4.29	6.56	5-4	z^5G^o-h^5D
5466.404	J	(3)	4.35	6.61	4-3	(1144)
5446.58	P		4.40	6.66	3-2	
5470.17	W	(1)	4.43	6.68	2-1	
5520.19	P	⊙?	4.43	6.66	3-2	
5455.433	K	(5)	4.30	6.56	6-6	z^5G^o-f^5G
m5404.12	P	Fe	4.29	6.58	5-5	(1145)
5400.509	J	(5)	4.35	6.64	4-4	
5389.461	K	(5)	4.40	6.69	3-3	
5398.285	V	(1)	4.43	6.71	2-2	
5422.15	P	⊙	4.30	6.58	6-5	
5265.42	P	⊙	4.29	6.64	5-4	
5327.86	P	⊙?	4.40	6.71	3-2	
5437.19	P	⊙	4.29	6.56	5-6	
5546.512	V	(1)	4.35	6.58	4-5	
5505.893	T	(-)	4.40	6.64	3-4	
5461.54	W	(1n)	4.43	6.69	2-3	
5424.072	I	45n	4.30	6.58	6-7	z^5G^o-e^5H
5383.374	I	35n	4.29	6.59	5-6	(1146)
5369.965	I	25n	4.35	6.65	4-5	
5367.470	I	20n	4.40	6.70	3-4	
5364.874	I	15n	4.43	6.73	2-3	
5401.27	P	⊙	4.30	6.59	6-6	
5236.38	P	⊙	4.29	6.65	5-5	
5267.28	P	⊙	4.35	6.70	4-4	
5295.316	U	(1)	4.40	6.73	3-3	
5290.79	P		4.30	6.63	6-5	z^5G^o-e^3G
5184.17	P	⊙	4.29	6.67	5-4	(1147)
5273.62	P	⊙	4.29	6.63	5-5	
5315.07	W	(1)	4.35	6.67	4-4	
5326.793	T	(-)	4.40	6.71	3-3	
5409.125	V	(1)	4.35	6.63	4-5	
5406.77	P	⊙	4.35	6.64	4-3	z^5G^o-f^3D
5417.03	W	(1)	4.40	6.67	3-2	(1148)
5512.40	P	⊙	4.40	6.64	3-3	
5489.85	P	⊙	4.43	6.67	2-2	
5262.61	P	⊙	4.30	6.65	6-6	z^5G^o-e^3H
5130.91	P	⊙	4.29	6.70	5-5	(1149)
5056.00	W	(1)	4.29	6.73	5-4	
5245.62	P	⊙	4.29	6.65	5-6	
5259.09	P	⊙	4.35	6.70	4-5	
5277.31	P	⊙	4.40	6.73	3-4	
5023.476	T	(-)	4.29	6.75	5-4	z^5G^o-f^3F
5031.901	R	8	4.35	6.81	4-3	(1150)
*5057.49	W	(1)	4.40	6.84	3-2	
5146.30	P	⊙	4.35	6.75	4-4	
5123.28	P	⊙	4.40	6.81	3-3	
5120.89	P	⊙	4.43	6.84	2-2	
5241.90	P	(1)	4.40	6.75	3-4	
4618.568	V	(2w)	4.29	6.97	5-5	z^5G^o-1 (1151)
4631.49	W	(1)	4.35	7.02	4-4	z^5G^o-3 (1152)
8598.79	O	4	4.37	5.80	5-5	z^3G^o-e^5F
8610.62	P	⊙	4.42	5.85	4-4	(1153)
8562.13	P	⊙	4.45	5.90	3-3	
8331.941	E	200	4.37	5.85	5-4	
8339.431	E	80	4.42	5.90	4-3	
836C.822	E	8	4.45	5.93	3-2	
8896.00	P	⊙	4.42	5.80	4-5	
8848.25	P		4.45	5.85	3-4	
7945.878	E	600	4.37	5.92	5-4	z^3G^o-e^3F
7832.224	E	400	4.42	5.99	4-3	(1154)
7780.586	E	300	4.45	6.04	3-2	
8198.951	E	80	4.42	5.92	4-4	
8028.341	E	50	4.45	5.99	3-3	
8414.08	P	⊙	4.45	5.92	3-4	
6681.34	P	⊙	4.37	6.21	5-6	z^3G^o-e^7F
6635.68	P	⊙	4.42	6.28	4-5	(1155)
6615.03	P	⊙	4.45	6.32	3-4	
6665.42	P	⊙	4.37	6.22	5-5	z^3G^o-f^7D
m6646.90	P	Fe	4.42	6.27	4-4	(1156)
6700.89	P	⊙	4.45	6.30	3-2	
6787.61	P	⊙	4.45	6.27	3-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
6628.41	P	⊙	4.37	6.23	5-4	z^3G^o-e^7P
6735.00	P	⊙	4.42	6.25	4-3	(1157)
6879.51	P	⊙	4.45	6.25	3-3	
6438.775	U	(1)	4.42	6.33	4-3	z^3G^o-e^3D (1158)
5653.889	U	(1w)	4.37	6.55	5-5	z^3G^o-g^5F
5631.72	U	(2)	4.45	6.65	3-3	(1159)
5549.55	P	⊙	4.37	6.59	5-4	
5499.60	P	⊙	4.45	6.70	3-2	
•5780.83	V	(1)	4.42	6.55	4-5	
5624.056	V	(1)	4.37	6.56	5-4	z^3G^o-h^5D
5589.00	P	⊙?	4.45	6.66	3-2	(1160)
5749.65	P	⊙	4.42	6.56	4-4	
5723.66	P	(1)	4.45	6.61	3-3	
5619.60	V	(1)	4.37	6.56	5-6	z^3G^o-f^5G
5708.109	V	(1)	4.42	6.58	4-5	(1161)
5651.47	P	⊙	4.45	6.64	3-4	
5553.586	V	(1)	4.42	6.64	4-4	
5528.89	P	⊙	4.45	6.69	3-3	
5436.299	U	(1)	4.37	6.64	5-4	
5435.17	P	⊙	4.42	6.69	4-3	
5562.12	P	⊙	4.37	6.59	5-6	z^3G^o-e^5H
5521.28	P	⊙	4.42	6.65	4-5	(1162)
5505.75	P	⊙	4.45	6.70	3-4	
5405.35	P	⊙	4.37	6.65	5-5	
5412.80	P	⊙	4.42	6.70	4-4	
5429.83	P	⊙	4.45	6.73	3-3	
5301.33	P	⊙	4.37	6.70	5-4	
5339.40	P	⊙	4.42	6.73	4-3	
5445.045	J	15n	4.37	6.63	5-5	z^3G^o-e^3G
5463.282	J	10n	4.42	6.67	4-4	(1163)
5462.970	J	(2)	4.45	6.71	3-3	
5349.742	T	(3)	4.37	6.67	5-4	
m5371.43	P	Fe	4.42	6.71	4-3	
•5562.712	V	(2)	4.42	6.63	4-5	
5557.954	V	(1)	4.45	6.67	3-4	
5560.230	V	(1)	4.42	6.64	4-3	z^3G^o-f^3D
5557.90	P	⊙	4.45	6.67	3-2	(1164)
5415.201	I	35n	4.37	6.65	5-6	z^3G^o-e^3H
5404.144	I	30n	4.42	6.70	4-5	(1165)
5410.913	I	15n	4.45	6.73	3-4	
5293.03	P	⊙	4.37	6.70	5-5	
5331.106	V	(1)	4.42	6.73	4-4	
5313.35	P	⊙	4.37	6.73	5-4	
5178.798	U	(1n)	4.37	6.75	5-4	z^3G^o-f^3F
5164.56	W	(1)	4.42	6.81	4-3	(1166)
5180.065	T	(-)	4.45	6.84	3-2	
5285.13	P	⊙	4.42	6.75	4-4	
5249.099	U	(1n)	4.45	6.81	3-3	
5373.704	V	(1)	4.45	6.75	3-4	
4838.81	P	⊙?	4.42	6.97	4-5	z^3G^o-1 (1167)
4744.13	P	⊙?	4.37	6.97	5-	z^3G^o-2 (1168)
4534.62	P	⊙	4.42	7.14	4-3	z^3G^o-i^5D
4566.03	P	⊙	4.45	7.16	3-2	(1169)
4367.07	P	⊙	4.37	7.19	5-5	z^3G^o-g^5G
4320.13	P	⊙?	4.37	7.22	5-4	(1170)
4357.50	P	⊙	4.42	7.25	4-3	
9786.62	F	2	4.59	5.85	3-4	y^3F^o-e^5F
9350.46	E	10	4.53	5.85	4-4	(1171)
9437.91	F	2	4.59	5.90	3-3	
8866.961	E	150	4.53	5.92	4-4	y^3F^o-e^3F
8793.376	E	120	4.59	5.99	3-3	(1172)
8764.000	E	100	4.63	6.04	2-2	
8439.603	E	20	4.53	5.99	4-3	
8497.00	O	8	4.59	6.04	3-2	
9258.30	E	20	4.59	5.92	3-4	
9079.599	E	8	4.63	5.99	2-3	
6843.671	I	60	4.53	6.33	4-3	y^3F^o-e^3D
6858.164	K	40	4.59	6.39	3-2	(1173)
6885.772	L	20	4.63	6.42	2-1	
7074.45	P	⊙	4.59	6.33	3-3	
7031.02	P	⊙	4.63	6.39	2-2	
6881.07	P	⊙	4.63	6.43	2-2	y^3F^o-g^5D
6627.558	L	5	4.53	6.39	4-3	(1174)
6715.410	V	5	4.59	6.43	3-2	
6804.020	V	5	4.63	6.45	2-1	
6105.15	P	⊙	4.53	6.55	4-5	y^3F^o-g^5F
6159.409	U	(1n)	4.59	6.59	3-4	(1175)
5983.704	K	6	4.53	6.59	4-4	
5997.808	V	(1)	4.59	6.65	3-3	
5973.37	P	⊙	4.63	6.70	2-2	
•5848.09	W	(2n)	4.59	6.70	3-2	
5927.798	V	(2w,d)	4.63	6.71	2-1	
6079.02	V	(1)	4.63	6.66	2-2	y^3F^o-h^5D
5929.700	U	(1)	4.53	6.61	4-3	(1176)
•5949.35	V	(2)	4.59	6.66	3-2	
6018.34	P	⊙	4.63	6.68	2-1	
6251.26	P	⊙	4.59	6.56	3-4	
6093.66	V	(1)	4.59	6.61	3-2	y^3F^o-f^5p
6094.419	U	(1)	4.63	6.66	2-1	(1177)
6024.066	K	15	4.53	6.58	4-5	y^3F^o-f^5G
6020.173	K	10n	4.59	6.64	3-4	(1178)
6007.961	K	(3n)	4.63	6.69	2-3	
5852.19	W	(2n)	4.53	6.64	4-4	
5981.28	P	⊙	4.59	6.69	3-3	
5720.89	P	⊙	4.53	6.69	4-3	
5807.97	P	⊙	4.59	6.71	3-2	
5816.36	V	(3d)	4.53	6.65	4-5	y^3F^o-e^5H
5855.126	V	(1)	4.59	6.70	3-4	(1179)
5891.16	P	⊙	4.63	6.73	2-3	
5696.10	P	⊙	4.53	6.70	4-4	
5769.31	P	(1)	4.59	6.73	3-3	
5862.357	K	8	4.53	6.63	4-5	y^3F^o-e^3G
•5914.16	V	8	4.59	6.67	3-4	(1180)
5930.173	K	8	4.63	6.71	2-3	
5752.043	J	(2)	4.53	6.67	4-4	
5806.727	V	(2)	4.59	6.71	3-3	
5650.31	P	⊙	4.53	6.71	4-3	
5859.608	K	5	4.53	6.64	4-3	y^3F^o-f^3D
•5914.16	V	8	4.59	6.67	3-2	(1181)
5905.673	K	3n	4.63	6.72	2-1	
5686.532	V	(3)	4.53	6.70	4-5	y^3F^o-e^3H
5747.95	V	(1)	4.59	6.73	3-4	(1182)
5594.661	V	(2)	4.53	6.73	4-4	
5554.895	I	4	4.53	6.75	4-4	y^3F^o-f^3F
5565.708	I	4	4.59	6.81	3-3	(1183)
5598.303	J	4	4.63	6.84	2-2	
5421.85	P	⊙	4.53	6.81	4-3	
5488.14	P	⊙	4.59	6.84	3-2	
5705.988	V	(2)	4.59	6.75	3-4	
5679.023	V	(2)	4.63	6.81	2-3	
5642.75	P	⊙	4.59	6.77	3-2	y^3F^o-e^3P
5759.270	U	(1)	4.63	6.77	2-2	(1184)
5057.83	P	⊙	4.53	6.97	4-	y^3F^o-2 (1185)
6930.35	P	⊙	4.54	6.32	3-4	y^5P^o-e^7F
•7145.317	V	5	4.59	6.31	2-3	(1186)
•6951.261	I	25	4.54	6.31	3-3	
7053.48	P		4.59	6.34	2-2	
6864.31	P	⊙	4.54	6.34	3-2	
7115.25	P	⊙?	4.59	6.32	2-1	
7120.01	P	⊙	4.54	6.27	3-4	y^5P^o-f^7D
7295.00	V	1	4.59	6.28	2-3	(1187)
7356.81	P	⊙	4.62	6.30	1-2	
•7222.88	V	(1)	4.59	6.30	2-2	
7330.16	P	⊙	4.62	6.30	1-1	
7024.649	V	10n	4.54	6.30	3-2	
§7320.694§	L	5n	4.54	6.22	3-4	y^5P^o-f^5D
7473.56	O	(1)	4.59	6.24	2-3	(1188)
7261.54	V	3n	4.54	6.24	3-3	
7382.99	V	1n	4.59	6.26	2-2	
7421.60	O	1	4.62	6.28	1-1	
7175.937	V	3	4.54	6.26	3-2	
7285.286	V	1	4.59	6.28	2-1	
7366.37	O	1	4.62	6.29	1-0	
7292.856	V	3n	4.54	6.23	3-4	y^5P^o-e^7P
7430.90	M	1	4.59	6.25	2-3	(1189)
7431.94	P	⊙	4.62	6.28	1-2	
7221.22	V	2n	4.54	6.25	3-3	
7295.27	P	⊙	4.59	6.28	2-2	
7093.10	P	⊙	4.54	6.28	3-2	
7034.06	P	⊙	4.54	6.29	3-4	y^5P^o-e^5G
7109.67	P	⊙	4.59	6.32	2-3	(1190)
7161.04	P	⊙	4.62	6.34	1-2	
6917.52	P		4.54	6.32	3-3	
7034.08	P	⊙	4.59	6.34	2-2	
6845.93	P	⊙	4.54	6.34	3-2	
6862.481	V	4n	4.54	6.34	3-4	y^5P^o-e^7G
6989.64	P	⊙	4.59	6.35	2-3	(1191)
6803.84	P	⊙	4.54	6.35	3-3	
6803.30	P	⊙	4.54	6.35	3-4	y^5P^o-f^5F
6920.16	P	⊙	4.59	6.37	2-3	(1192)
6838.08	V	4nl	4.54	6.37	3-3	
6692.47	P	1	4.54	6.38	3-2	
6848.86	P	⊙	4.59	6.39	2-1	
•6951.261	I	25	4.54	6.31	3-2	y^5P^o-e^5S
•7145.317	V	5	4.59	6.31	2-2	(1193)
6881.74	M	1	4.54	6.33	3-3	y^5P^o-e^3D
6855.74	V	2	4.59	6.39	2-2	(1194)
6833.24	V	1	4.62	6.42	1-1	
6676.86	P	⊙	4.54	6.39	3-2	
6717.556	V	3	4.59	6.42	2-1	
7071.88	V	1	4.59	6.33	2-3	
6976.306	V	1	4.62	6.39	1-2	
6855.176	I	150	4.54	6.34	3-4	y^5P^o-g^5D
6841.349	I	80	4.59	6.39	2-3	(1195)
6828.610	I	50	4.62	6.43	1-2	
6663.26	V	(1)	4.54	6.39	3-3	
•6713.14	V	6d	4.59	6.43	2-2	
6752.724	L	10	4.62	6.45	1-1	
6541.49	P		4.54	6.43	3-2	
6639.71	P	4	4.59	6.45	2-1	
6733.164	L	6	4.62	6.45	1-0	
6753.45	P	⊙	4.54	6.37	3-3	y^5P^o-e^7S
6936.48	P	⊙	4.59	6.37	2-3	(1196)
6633.764	K	50	4.54	6.40	3-3	y^5P^o-e^5P
6705.117	I	15n	4.59	6.43	2-2	(1197)
6842.668	V	6n	4.62	6.42	1-1	
6533.97	V	8n	4.54	6.43	3-2	
6726.668	V	20n	4.59	6.42	2-1	
6810.28	V	20n	4.59	6.40	2-3	
6820.43	O	8n	4.62	6.43	1-2	
6012.75	P	⊙	4.54	6.59	3-4	y^5P^o-g^5F
5995.93	P	⊙	4.59	6.65	2-3	(1198)
5933.80	P	⊙	4.62	6.70	1-2	
5715.80	P	⊙	4.54	6.70	3-2	
6100.29	P		4.54	6.56	3-4	y^5P^o-h^5D
6100.33	P	(1)	4.59	6.61	2-3	(1199)
•5958.32	P	(2)	4.54	6.61	3-3	
5947.50	P	(1)	4.59	6.66	2-2	
5978.17	P	⊙	4.62	6.68	1-1	
6098.28	P	⊙	4.54	6.56	3-3	y^5P^o-f^5p
6091.74	P	⊙	4.59	6.61	2-2	(1200)
5950.13	P	⊙	4.54	6.61	3-2	
5880.00	V	(2wd)	4.54	6.64	3-4	y^5P^o-f^5G
5879.49	P	⊙	4.59	6.69	2-3	(1201)
5892.46	P	⊙	4.62	6.71	1-2	
5640.46	W	(1n)	4.54	6.73	3-3	y^5P^o-e^5H (1202)
5887.46	P	⊙	4.54	6.64	3-3	y^5P^o-f^3D
5867.01	P	⊙	4.62	6.72	1-1	(1203)
5778.81	P	⊙	4.54	6.67	3-2	
•5759.57	P	(2)	4.54	6.68	3-4	y^5P^o-g^7D
5727.75	U	(1)	4.59	6.74	2-2	(1204)
•5620.04	W	(1)	4.54	6.73	3-4	y^5P^o-e^3H (1205)
4776.34	V	(1n)	4.54	7.12	3-4	y^5P^o-i^5D
4839.77	P	⊙	4.59	7.14	2-3	(1206)
4749.93	V	(1)	4.54	7.14	3-3	
4802.53	P	⊙	4.59	7.16	2-2	
4714.074	V	(1n)	4.54	7.16	3-2	
4661.538	J	(2n)	4.54	7.19	3-2	y^5P^o-4 (1207)
10333.24	P	⊙	4.57	5.77	4-4	d^3F-u^5D^o
10307.48	P	⊙	4.57	5.77	4-3	(1208)
10156.50	P	⊙	4.57	5.79	4-4	d^3F-x^3F^o
9881.51	P	1	4.56	5.81	3-3	(1209)
9747.24	F	2	4.56	5.83	2-2	
9950.70	P	⊙	4.57	5.81	4-3	
10084.42	P	⊙	4.56	5.79	3-4	
9937.10	P	⊙	4.57	5.82	4-4	d^3F-z^3H^o (1210)
10026.10	P		4.57	5.80	4-3	d^3F-w^3D^o
9839.38	F	1	4.56	5.82	3-2	(1211)
9771.06	P	⊙	4.56	5.84	2-1	
9955.85	P	⊙	4.56	5.80	3-3	
9636.69	Y	(1)	4.57	5.85	4-5	d^3F-w^5G^o (1213)
9225.55	O	(1)	4.56	5.90	3-4	d^3F-x^3G^o (1213)
8848.46	P	⊙	4.56	5.96	2-2	d^3F-v^5F^o (1214)
8576.50	P	⊙	4.57	6.01	4-4	d^3F-y^1G^o
8525.04	P	⊙	4.56	6.01	3-4	(1215)
8253.78	P	⊙	4.56	6.06	2-2	d^3F-2^o (1216)
•8149.59	O	3	4.56	6.08	3-3	d^3F-w^3F^o
8002.55	P	⊙	4.56	6.10	2-2	(1217)
8196.52	P	⊙	4.57	6.08	4-3	
8269.66	P	⊙	4.57	6.07	4-3	d^3F-v^3D^o
•8149.59	O	3	4.56	6.08	3-2	(1218)
7129.30	P	⊙	4.57	6.30	4-5	d^3F-x^3H^o (1219)
7125.28	P	⊙	4.57	6.31	4-4	d^3F-t^5D^o
6949.37	P		4.56	6.34	3-3	(1220)
6805.72	P	⊙	4.56	6.37	2-2	
6983.53	P	⊙	4.57	6.34	4-3	
6822.00	P	1	4.56	6.37	3-2	
6711.24	P	⊙	4.56	6.40	2-1	
7089.73	P	⊙	4.56	6.31	3-4	
6932.49	P	⊙	4.56	6.34	2-3	
7011.364	V	3	4.57	6.33	4-4	d^3F-v^3F^o
•6947.501	V	3	4.56	6.34	3-3	(1221)
7010.362	V	2	4.56	6.32	2-2	
7027.60	V	(1)	4.56	6.32	3-2	
6976.934	V	3	4.56	6.33	3-4	
6930.64	V	1	4.56	6.34	2-3	
6960.334	V	2	4.57	6.35	4-4	d^3F-4^o
6926.40	P	⊙	4.56	6.35	3-4	(1222)
•6947.501	V	3	4.57	6.35	4-	d^3F-5^o (1224)
6854.82	V	2	4.57	6.37	4-5	d^3F-6^o (1224a)
6977.445	V	4	4.57	6.34	4-5	d^3F-u^3G^o
6804.27	V	3	4.56	6.38	3-4	(1225)
6716.24	V	3	4.56	6.40	2-3	
6837.00	O	3	4.57	6.38	4-4	
6732.06	V	1	4.56	6.40	3-3	
6764.13	P	⊙	4.57	6.40	4-3	
6785.76	P	⊙	4.56	6.38	3-2	d^3F-y^1D^o
6769.66	P	⊙	4.56	6.38	2-2	(1226)
6761.07	P	⊙	4.56	6.39	3-2	d^3F-x^1D^o
6745.11	V	1	4.56	6.39	2-2	(1227)
6699.14	V	2	4.57	6.42	4-3	d^3F-u^3D^o
6667.73	V	(1)	4.56	6.42	3-3	(1228)
6591.32	V	2	4.57	6.45	4-3	d^3F-t^3D^o
6364.717	V	(1)	4.56	6.50	3-2	(1229)
6306.19	P	⊙	4.57	6.53	4-5	d^3F-y^3I^o (1230)
6271.52	P	⊙	4.56	6.53	3-2	d^3F-v^3P^o
5926.83	P	⊙	4.56	6.64	2-1	(1231)
6016.95	P	⊙	4.57	6.62	4-3	d^3F-y^1F^o
5991.58	P	⊙	4.56	6.62	3-3	(1232)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5955.12	P	⊙	4.56	6.64	3-3	d^3F-x^1F^o
5942.71	P	⊙	4.56	6.64	2-3	(1233)
5902.52	V	(1)	4.57	6.66	4-5	d^3F-t^3G^o
5791.53	P	⊙	4.56	6.70	3-4	(1234)
5661.03	P	⊙	4.56	6.74	2-3	
5815.33	P	(1)	4.57	6.70	4-4	
5672.28	P	(1)	4.56	6.74	3-3	
5895.007	U	(1)	4.57	6.67	4-3	d^3F-11^o
5870.65	P	⊙	4.56	6.67	3-3	(1235)
5891.89	P	(1)	4.57	6.67	4-5	d^3F-12^o (1236)
5793.70	P	⊙	4.57	6.70	4-4	d^3F-13^o
5770.17	P	⊙	4.56	6.70	3-4	(1236a)
5438.04	P	⊙	4.57	6.84	4-5	d^3F-v^3H^o
5412.56	P	⊙	4.56	6.84	3-4	(1237)
5313.839	T	(-)	4.56	6.88	2-2	d^3F-w^1D^o (1238)
5313.41	P	⊙	4.56	6.89	3-3	d^3F-w^1F^o (1239)
5300.41	P	⊙	4.57	6.90	4-5	d^3F-s^3G^o
5281.18	P	⊙	4.56	6.90	3-4	(1240)
5218.51	P	⊙	4.56	6.93	2-3	
5170.08	P	⊙	4.57	6.96	4-5	d^3F-u^3H^o (1241)
5114.52	P	⊙	4.57	6.99	4-4	d^3F-u^3F^o
5047.14	P	⊙	4.56	7.01	3-3	(1242)
5019.18	P	⊙	4.56	7.02	2-2	
5096.17	P	⊙	4.56	6.99	3-4	
4875.72	P	⊙	4.57	7.10	4-4	d^3F-t^3F^o
4837.65	P	⊙	4.56	7.12	3-3	(1243)
4813.72	P	⊙	4.56	7.12	2-2	
4854.18	P	⊙	4.57	7.12	4-3	
4369.29	P	⊙	4.57	7.40	4-5	d^3F-r^3G^o (1244)
4253.55	P	⊙	4.57	7.47	4-5	d^3F-t^3H^o
4203.67	P	⊙	4.56	7.50	3-4	(1245)
10863.60	D	5	4.71	5.85	3-4	y^3D^o-e^5F
11013.27	D	1	4.77	5.90	2-3	(1246)
10435.38	P	⊙	4.71	5.90	3-3	
10316.351	E	100	4.71	5.92	3-4	y^3D^o-e^3F
10145.601	E	80	4.77	5.99	2-3	(1247)
10065.080	E	60	4.81	6.04	1-2	
9653.143	E	20	4.71	5.99	3-3	
9753.129	E	10	4.77	6.04	2-2	
9297.14	P	⊙	4.71	6.04	3-2	
8016.51	P	⊙	4.77	6.31	2-2	y^3D^o-e^5S (1249)
7620.538	E	25	4.71	6.33	3-3	y^3D^o-e^3D
7653.783	L	6	4.77	6.39	2-2	(1250)
7664.15	P	⊙	4.81	6.42	1-1	
7370.16	O	1	4.71	6.39	3-2	
7481.93	P	(1)	4.77	6.42	2-1	
7924.14	P	⊙	4.77	6.33	2-3	
7844.55	P	2	4.81	6.39	1-2	
7353.528	V	1	4.71	6.39	3-3	y^3D^o-g^5D
7476.40	P	(1)	4.77	6.43	2-2	(1251)
7563.03	O	1n	4.81	6.45	1-1	
7205.51	P	⊙	4.71	6.43	3-2	
7385.54	P	⊙	4.77	6.45	2-1	
7196.37	P	⊙	4.71	6.43	3-2	y^3D^o-e^5P (1252)
6569.231	I	50n	4.71	6.59	3-4	y^3D^o-g^5F
6597.607	V	15n	4.77	6.65	2-3	(1253)
6385.74	P	⊙	4.71	6.65	3-3	
m6416.94	P	Fe+	4.77	6.70	2-2	
6495.779	U	3	4.81	6.71	1-1	
6364.384	V	(1)	4.77	6.71	2-1	
6673.84	P	⊙	4.71	6.56	3-4	y^3D^o-h^5D
6604.67	V	(1)	4.81	6.68	1-1	(1254)
6330.856	U	(1n)	4.71	6.66	3-2	
6468.86	P	⊙	4.77	6.68	2-1	
6671.43	P		4.71	6.56	3-3	y^3D^o-f^5P
6713.76	V	3n	4.77	6.61	2-2	(1255)
6696.30	P	⊙	4.81	6.66	1-1	
6494.52	P	⊙	4.71	6.61	3-2	
6556.79	U	(1)	4.77	6.66	2-1	
6860.13	P	⊙	4.81	6.61	1-2	
6411.10	P	1n	4.71	6.64	3-4	y^3D^o-f^5G
6456.87	P	⊙	4.77	6.69	2-3	(1256)
6253.82	P	⊙	4.71	6.69	3-3	
6171.01	P	⊙	4.71	6.71	3-2	
6224.23	P	⊙?	4.71	6.70	3-4	y^3D^o-e^5H (1257)
6419.982	K	30n	4.71	6.64	3-3	y^3D^o-f^3D
6496.456	K	20n	4.77	6.67	2-2	(1258)
6469.214	I	15n	4.81	6.72	1-1	
6290.968	I	3n	4.71	6.67	3-2	
6338.896	V	(1n)	4.77	6.72	2-1	
6634.10	P	4n	4.77	6.64	2-3	
6633.44	M	4n	4.81	6.67	1-2	
6055.987	K	4	4.71	6.75	3-4	y^3D^o-f^3F
6078.496	K	4n	4.77	6.81	2-3	(1259)
6102.178	K	5	4.81	6.84	1-2	
5898.212	U	(1)	4.71	6.81	3-3	
5984.805	K	8	4.71	6.77	3-2	y^3D^o-e^3P
5987.057	K	6	4.77	6.84	2-1	(1260)
*5975.355	J	4	4.81	6.88	1-0	
6170.492	K	4n	4.77	6.77	2-2	
6103.190	K	3	4.81	6.84	1-1	
6293.92	P	⊙	4.81	6.77	1-2	
m8920.02	P	Fe	4.89	6.28	4-5	x^5D^o-e^7F
*9157.08	P	(2)	4.97	6.31	2-3	(1261)
9328.64	P	⊙	5.00	6.32	0-1	
8643.29	P	⊙	4.89	6.32	4-4	
9006.72	F	1	4.97	6.34	2-2	
9253.72	P	⊙	4.99	6.32	1-1	
9298.05	P	⊙	4.89	6.22	4-5	x^5D^o-f^7D
9178.57	F	1n	4.93	6.28	3-3	(1262)
9392.77	P	⊙	4.99	6.30	1-1	
9242.32	F	2	4.97	6.30	2-1	
9259.05	F	15	4.89	6.22	4-4	x^5D^o-f^5D
9462.97	F	2	4.93	6.24	3-3	(1263)
9550.90	F	2	4.97	6.26	2-2	
9164.51	U	(1)	4.89	6.24	4-3	
9318.13	F	3	4.93	6.26	3-2	
9388.28	F	3n	4.97	6.28	2-1	
*9452.45	F	2	4.99	6.29	1-0	
9214.45	F	6	4.89	6.23	4-4	x^5D^o-e^7P
9394.71	F	3n	4.93	6.25	3-3	(1264)
9404.80	P	⊙?	4.97	6.28	2-2	
9100.50	F	5n	4.89	6.25	4-3	
9024.47	F	15	4.89	6.26	4-5	x^5D^o-e^5G
*9080.48	F	3n	4.93	6.29	3-4	(1265)
9116.89	P	⊙	4.99	6.34	1-2	
8805.21	P	⊙	4.89	6.29	4-4	
8887.10	P	⊙	4.93	6.32	3-3	
8616.27	P	⊙	4.89	6.32	4-5	x^5D^o-e^7G
8796.42	F	2	4.93	6.34	3-4	(1266)
8902.94	P	⊙	4.97	6.35	2-3	
8978.04	P	⊙	4.99	6.36	1-2	
8538.02	P	⊙	4.89	6.34	4-4	
8700.34	P	⊙	4.93	6.35	3-3	
8956.26	P	⊙	4.99	6.37	1-1	
8447.41	P	⊙	4.89	6.35	4-3	
8819.42	P	⊙	4.97	6.37	2-1	
8710.29	F	20n	4.89	6.31	4-5	x^5D^o-f^5F
8699.43	O	(4n)	4.93	6.35	3-4	(1267)
8790.62	F	10n	4.97	6.37	2-3	
8846.82	F	5	4.99	6.38	1-2	
8876.13	F	2	5.00	6.39	0-1	
8446.56	P		4.89	6.35	4-4	
8592.97	O	(2n)	4.93	6.37	3-3	
*8713.19	F	10	4.97	6.38	2-2	
8808.17	P	4n	4.99	6.39	1-1	
8519.05	P	⊙	4.93	6.38	3-2	
*9157.07	P	(2)	4.97	6.31	2-2	x^5D^o-e^5S (1268)
8567.78	P	⊙	4.89	6.33	4-3	x^5D^o-e^3D
8493.79	P	⊙	4.93	6.39	3-2	(1269)
8466.10	P	⊙	4.97	6.42	2-1	
8828.08	P	⊙	4.93	6.33	3-3	
8686.77	P	⊙	4.97	6.39	2-2	
8592.10	P	⊙	4.99	6.42	1-1	
9036.74	P	(1)	4.97	6.33	2-3	
8819.48	P	⊙	4.99	6.39	1-2	
8656.67	P	⊙	5.00	6.42	0-1	
8526.685	E	8	4.89	6.34	4-4	x^5D^o-g^5D
8471.75	O	2	4.93	6.39	3-3	(1270)
8459.01	P	⊙	4.97	6.43	2-2	
8465.23	P	⊙	4.99	6.45	1-1	
8275.91	O	4n	4.93	6.43	3-2	
8342.95	R	(-)	4.97	6.45	2-1	
8434.51	P	⊙	4.99	6.45	1-0	
8784.44	F	5	4.93	6.34	3-4	
8663.73	P	⊙	4.97	6.39	2-3	
8584.82	P	⊙	4.99	6.43	1-2	
8527.88	P	⊙	5.00	6.45	0-1	
8369.87	P	⊙	4.89	6.37	4-3	x^5D^o-e^7S
8816.86	P	⊙	4.97	6.37	2-3	(1271)
8186.80	O	10nd?	4.89	6.40	4-3	x^5D^o-e^5P
8263.86	P	⊙	4.93	6.43	3-2	(1272)
8480.63	P	⊙	4.97	6.42	2-1	
8424.14	O	2n	4.93	6.40	3-3	
8446.42	P		4.97	6.43	2-2	
8607.08	P	⊙	4.99	6.42	1-1	
8613.93	P	⊙	4.97	6.40	2-3	
8571.84	P	⊙	4.99	6.43	1-2	
8671.86	P	⊙	5.00	6.42	0-1	
7440.98	V	2n	4.89	6.55	4-5	x^5D^o-g^5F
7447.43	V	1	4.93	6.59	3-4	(1273)
7351.160	V	2n	4.97	6.65	2-3	
7216.68	P	⊙	4.99	6.70	1-2	
7194.92	O	1	5.00	6.71	0-1	
7261.29	P	⊙	4.89	6.59	4-4	
7212.47	V	1n	4.93	6.65	3-3	
7127.58	P	⊙	4.97	6.70	2-2	
6997.13	P	⊙	4.93	6.70	3-2	
7062.80	P	⊙	4.97	6.71	2-1	
7389.34	P		4.89	6.56	4-4	x^5D^o-h^5D
7363.96	O	1n	4.93	6.61	3-3	(1274)
7278.48	P	⊙	4.97	6.66	2-2	
7282.39	V	1n	4.99	6.68	1-1	
7181.93	V	1n	4.89	6.61	4-3	
7142.522	V	4n	4.93	6.66	3-2	
7191.66	O	(1)	4.97	6.68	2-1	
7582.15	P	⊙	4.93	6.56	3-4	
7508.53	P	⊙	4.97	6.61	2-3	
7386.394	L	8n	4.89	6.56	4-3	x^5D^o-f^5P
7351.56	V	4	4.93	6.61	3-2	(1275)
7300.47	O	1n	4.97	6.66	2-1	
7495.67	P	⊙	4.97	6.61	2-2	
§7320.694§	L	5n	4.89	6.58	4-5	x^5D^o-f^5G
7244.86	V	2n	4.93	6.64	3-4	(1276)
7176.886	V	2n	4.97	6.69	2-3	
7155.64	V	3n	4.99	6.71	1-2	
7068.60	P	⊙	4.89	6.64	4-4	
7044.60	O	(1)	4.93	6.69	3-3	
7068.02	P	⊙	4.97	6.71	2-2	
7083.396	V	1n	4.89	6.63	4-5	x^5D^o-e^3G
7091.91	P	(1)	4.93	6.67	3-4	(1277)
7066.15	P	⊙	4.97	6.71	2-3	
7079.32	P	⊙	4.89	6.64	4-3	x^5D^o-f^3D
7091.83	O	(1)	4.93	6.67	3-2	(1278)
7031.42	P	⊙	4.97	6.72	2-1	
7256.13	P	(1)	4.93	6.64	3-3	
7225.82	P	⊙	4.97	6.67	2-2	
7118.12	P	⊙	4.99	6.72	1-1	
7396.50	P	⊙	4.97	6.64	2-3	
7317.40	P	⊙	4.99	6.67	1-2	
7163.37	P	⊙	5.00	6.72	0-1	
6639.35	P	⊙	4.89	6.75	4-4	x^5D^o-f^3F
6794.60	P	⊙	4.93	6.75	3-4	(1279)
6713.44	P	⊙	4.97	6.81	2-3	
m6705.13	P	Fe	4.93	6.77	3-2	x^5D^o-e^3P
6601.13	P	⊙	4.97	6.84	2-1	(1280)
6524.76	P	⊙	4.99	6.88	1-0	
6824.82	P	⊙	4.97	6.77	2-2	
6677.49	P	⊙	4.99	6.84	1-1	
5531.949	U	(1)	4.89	7.12	4-4	x^5D^o-1^5D
5603.54	P	⊙	4.93	7.14	3-3	(1281)
5634.53	P	⊙	4.97	7.16	2-2	
5496.57	P	⊙	4.89	7.14	4-3	
5552.70	P	⊙	4.93	7.16	3-2	
5685.86	P	⊙	4.97	7.14	2-3	
5690.07	P	⊙	4.99	7.16	1-2	
5479.95	P	⊙	4.93	7.19	3-2	x^5D^o-4
5559.64	P	⊙	4.97	7.19	2-2	(1282)
5613.70	P	⊙	4.99	7.19	1-2	
9602.07	F	2	4.99	6.28	4-5	y^7P^o-e^7F
8863.64	F	1p?	4.94	6.34	2-2	(1283)
9383.93	P	3n	4.96	6.28	3-3	y^7P^o-f^7D (1284)
9944.13	F	3n	4.99	6.23	4-4	y^7P^o-e^7P
9608.89	P	⊙?	4.96	6.25	3-3	(1285)
9248.80	P	⊙	4.94	6.28	2-2	
9811.36	F	2	4.99	6.25	4-3	
9383.40	P	⊙	4.96	6.28	3-2	
8967.53	P	⊙	4.99	6.37	4-3	y^7P^o-e^7S
8798.05	P	⊙	4.96	6.37	3-3	(1286)
8679.61	P	⊙	4.94	6.37	2-3	
7909.60	P	⊙?	4.99	6.55	4-5	y^7P^o-g^5F (1287)
6813.55	P	⊙?	4.96	6.77	3-2	y^7P^o-e^3P (1288)
6245.84	V	(1)	4.99	6.97	4-5	y^7P^o-1 (1289)
5678.04	P	⊙?	4.96	7.14	3-3	y^7P^o-1^5D
5748.15	P	⊙?	4.99	7.14	4-3	(1290)
5720.79	P	(1n)	4.99	7.15	4-5	y^7P^o-h^7D (1291)
9913.19	P	⊙	4.97	6.21	5-6	x^5F^o-e^7F
9763.913	E	15	5.01	6.28	4-5	(1292)
9658.94	F	3	5.04	6.32	3-4	
*9868.09	F	3	5.06	6.31	2-3	
9800.79	P	⊙	5.08	6.34	1-2	
*9452.45	F	2	4.97	6.28	5-5	
9433.29	P	⊙	5.01	6.32	4-4	
*9699.70	F	6n	5.04	6.31	3-3	
9693.69	F	1	5.06	6.34	2-2	
9920.46	P	⊙	5.08	6.32	1-1	
9531.22	P	⊙	5.04	6.34	3-2	
9878.18	P	⊙	4.97	6.22	5-5	x^5F^o-f^7D
9977.52	F	1	5.04	6.28	3-3	(1293)
10016.67	P	⊙	5.06	6.30	2-2	
10080.44	P	⊙	5.08	6.30	1-1	
9967.32	P	⊙	5.06	6.30	2-1	
9834.04	F	3n	4.97	6.22	5-4	x^5F^o-f^5D
10057.64	F	3	5.01	6.24	4-3	(1294)
10142.82	F	2	5.04	6.26	3-2	
10137.06	P	⊙	5.06	6.28	2-1	
10149.09	P	⊙	5.08	6.29	1-0	
9783.96	F	3	4.97	6.23	5-4	x^5F^o-e^7P
9980.55	F	2n	5.01	6.25	4-3	(1295)
10117.81	P	⊙	5.01	6.23	4-4	
9738.624	E	200	4.97	6.24	5-6	x^5F^o-e^5G
9889.082	E	40	5.01	6.26	4-5	(1296)
9861.793	E	30	5.04	6.29	3-4	
9800.335	E	20	5.06	6.32	2-3	
9763.450	E	15	5.08	6.34	1-2	
9569.960	E	40n	4.97	6.26	5-5	
9626.562	E	30n	5.01	6.29	4-4	
9634.22	F	5	5.04	6.32	3-3	
9657.30	F	4	5.06	6.34	2-3	
9409.55	P	⊙	5.01	6.32	4-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
9333.94	F	2	4.97	6.29	5-6	x^5F^o-e^7G
9401.09	F	10n	5.01	6.32	4-5	(1297)
9527.73	P	1	5.04	6.34	3-4	
9573.65	P	⊂	5.06	6.35	2-3	
9118.25	P	⊙	4.97	6.32	5-5	
9307.94	F	2	5.01	6.34	4-4	
9415.04	P		5.04	6.35	3-3	
9024.78	P	⊙	4.97	6.34	5-4	
9217.54	F	5n	4.97	6.31	5-5	x^5F^o-f^5F
9199.52	F	2n	5.01	6.35	4-4	(1298)
9289.39	P	⊙	5.04	6.37	3-3	
9410.15	P	1n	5.08	6.39	1-1	
8923.66	P	⊂	4.97	6.35	5-4	
*9080.48	F	3n	5.01	6.37	4-3	
9203.10	P	⊙	5.04	6.38	3-2	
9513.24	E	10n	5.01	6.31	4-5	
9414.14	F	20n	5.04	6.35	3-4	
9443.98	F	10n	5.06	6.37	2-3	
9454.24	F	4n	5.08	6.38	1-2	
*9699.70	F	6n	5.04	6.31	3-2	x^5F^o-e^5S
*9868.09	F	3	5.06	6.31	2-2	(1299)
9343.40	F	3	5.01	6.33	4-3	x^5F^o-e^3D
9173.63	P	4nd	5.04	6.39	3-2	(1300)
*9070.42	F	2	5.06	6.42	2-1	
9324.07	0	(1)	5.06	6.39	2-2	
9423.07	P	⊙	5.08	6.39	1-2	
9013.098	E	30	4.97	6.34	5-4	x^5F^o-g^5D
8945.204	E	20	5.01	6.39	4-3	(1301)
8919.95	F	10	5.04	6.43	3-2	
8929.04	F	5	5.06	6.45	2-1	
8984.87	F	3	5.08	6.45	1-0	
9294.66	F	2	5.01	6.34	4-4	
9147.800	E	5n	5.04	6.39	3-3	
9062.24	F	2	5.06	6.43	2-2	
9019.84	F	2	5.08	6.45	1-1	
9155.67	P	1	5.08	6.43	1-2	
8892.13	P	⊙	5.01	6.40	4-3	x^5F^o-e^5P
8905.99	P	⊙	5.04	6.43	3-2	(1302)
7807.97	P	⊂	4.97	6.55	5-5	x^5F^o-g^5F
7810.81	P	⊙	5.01	6.59	4-4	(1303)
7551.10	P	⊙	5.06	6.70	2-2	
7552.79	P	⊙	5.01	6.65	4-3	
7452.08	P	⊙	5.04	6.70	3-2	
7964.93	P	⊙	5.04	6.59	3-4	
7802.49	P	⊙	5.06	6.65	2-3	
7751.18	0	5n	4.97	6.56	5-4	x^5F^o-h^5D
7719.05	P	⊙	5.01	6.61	4-3	(1304)
7617.19	P	⊙	5.04	6.66	3-2	
7959.21	0	(1)	5.01	6.56	4-4	
7720.68	P	⊙	5.06	6.66	2-2	
7689.10	P	⊙	5.08	6.68	1-1	
7980.04	P	⊙?	5.06	6.61	2-3	
7955.81	0	(1)	5.01	6.56	4-3	x^5F^o-f^5P
7855.41	P	4n	5.04	6.61	3-2	(1305)
7745.48	P	⊙	5.06	6.66	2-1	
7965.52	P	⊙	5.06	6.61	2-2	
7813.62	P	⊙	5.08	6.66	1-1	
7742.71	0	4n	4.97	6.56	5-6	x^5F^o-f^5G
7879.75	P	1	5.01	6.58	4-5	(1306)
7733.68	P	⊙	5.04	6.64	3-4	
7547.89	P	⊙	5.08	6.71	1-2	
7588.30	P	⊙	5.01	6.64	4-4	
7505.98	P	⊙	5.04	6.69	3-3	
7484.28	P	⊙	5.06	6.71	2-2	
7398.98	P	⊙	4.97	6.64	5-4	
7528.15	P	⊂	5.01	6.65	4-5	x^5F^o-e^5H
7463.36	P	⊙	5.04	6.70	3-4	(1307)
7420.20	P	⊙	5.06	6.73	2-3	
7341.78	P	⊙	4.97	6.65	5-5	
7194.02	P	⊙	5.01	6.73	4-3	
7415.19	P	⊙	4.97	6.63	5-5	x^5F^o-e^3G
7384.96	P	⊂	5.04	6.71	3-3	(1308)
7605.32	0	2n	5.01	6.63	4-5	
7559.68	0	1n	5.04	6.67	3-4	
7482.20	P	⊙	5.06	6.71	2-3	
7443.26	P	⊙	5.06	6.72	2-1	x^5F^o-f^3D
7746.56	P	⊙	5.04	6.64	3-3	(1309)
7661.46	P	⊂	5.06	6.67	2-2	
7359.95	P	⊂	4.97	6.65	5-6	x^5F^o-e^3H
7312.05	P	⊙	5.01	6.70	4-5	(1310)
7160.85	P	⊙	5.01	6.73	4-4	
*7232.88	V	(1)	5.04	6.75	3-4	x^5F^o-f^3F
*7086.76	V	2	5.06	6.81	2-3	(1311)
6027.76	P	⊙	4.97	7.02	5-4	x^5F^o-3
6152.82	P	⊙?	5.01	7.02	4-4	(1312)
5732.29	P	⊙	4.97	7.12	5-4	x^5F^o-i^5D
5805.76	P	(1)	5.01	7.14	4-3	(1313)
5835.41	P	⊙	5.04	7.16	3-2	
5845.37	P	⊙	5.01	7.12	4-4	
5890.48	P	⊂	5.04	7.14	3-3	
5952.19	P	⊂	5.06	7.14	2-3	
5633.970	V	(2)	4.97	7.16	5-6	x^5F^o-g^5G
*5655.506	V	4	5.01	7.19	4-5	(1314)
5655.179	V	(2)	5.04	7.22	3-4	
5650.71	V	(1)	5.06	7.25	2-3	
5650.01	V	(1)	5.08	7.26	1-2	
5549.66	P	⊙	4.97	7.19	5-5	
5577.03	P	⊙	5.01	7.22	4-4	
5595.06	P	⊙	5.04	7.25	3-3	
5614.29	P	⊙	5.06	7.26	2-2	
5474.09	P	⊙	4.97	7.22	5-4	
5518.57	P	⊙	5.01	7.25	4-3	
11479.87	P	⊙?	5.00	6.08	3-2	a^1F-v^3D^o (1315)
10875.00	P	⊙	5.00	6.14	3-4	a^1F-y^3H^o (1316)
9917.93	F	2	5.00	6.25	3-4	a^1F-x^1G^o (1317)
8852.30	P	⊙?	5.00	6.40	3-2	a^1F-u^5F^o (1318)
9482.82	P	⊙?	5.00	6.31	3-4	a^1F-t^5D^o (1319)
8959.88	P	⊙?	5.00	6.38	3-3	a^1F-u^5P^o (1320)
8559.98	W	(1)	5.00	6.45	3-3	a^1F-t^3D^o (1321)
8171.30	P	⊙	5.00	6.51	3-4	a^1F-w^3H^o (1322)
7846.47	P	⊙?	5.00	6.58	3-2	a^1F-s^3D^o (1323)
7107.30	P	⊙	5.00	6.74	3-3	a^1F-t^3G^o (1324)
6552.77	W	(2)	5.00	6.89	3-3	a^1F-w^1F^o (1325)
6124.08	P	⊙	5.00	7.02	3-2	a^1F-u^3F^o (1326)
6089.566	L	(1)	5.00	7.03	3-4	a^1F-v^1G^o (1327)
5041.32	P	⊙	5.00	7.45	3-3	a^1F-r^3G^o (1328)
9008.37	F	2	5.05	6.42	3-3	X-u^3D^o (1329)
8814.50	P	2	5.05	6.45	3-3	X-t^3D^o
8689.83	P	⊙	5.08	6.50	2-2	(1330)
8464.02	P	⊙	5.05	6.50	3-2	
8300.01	P	⊙	5.05	6.53	3-2	X-v^3P^o (1331)
8274.28	0	6	5.05	6.54	3-3	X-s^3D^o
8264.27	M	3	5.08	6.58	2-2	(1332)
6700.90	P	⊙	5.05	6.89	3-3	X-w^1F^o
6841.65	P	⊙	5.08	6.89	2-3	(1333)
6406.42	W	(1)	5.08	7.01	2-3	X-u^3F^o (1334)
6217.288	V	(1)	5.05	7.03	3-4	X-v^1G^o (1335)
10012.15	P	⊙	5.05	6.28	2-1	z^5S^o-f^5D (1336)
9683.57	F	1	5.05	6.32	2-3	z^5S^o-e^5G (1337)
9335.27	P	⊂	5.05	6.37	2-3	z^5S^o-f^5F
9248.13	P	⊙	5.05	6.38	2-2	(1338)
*7148.69	R	(-)	5.05	6.77	2-2	z^5S^o-e^3P (1339)
5853.48	P	⊙?	5.05	7.16	2-2	z^5S^o-i^5D (1340)
10890.13	P	⊂?	5.29	6.42	2-1	x^5P^o-e^3D
11542.96	P	⊂?	5.32	6.39	1-2	(1341)
9233.15	P	(1)	5.30	6.63	5-5	y^5G^o-e^3G
9052.56	P	(1)	5.31	6.67	4-4	(1342)
6671.36	W	(2)	5.30	7.15	5-5	y^5G^o-h^7D (1343)
6450.99	V	(1)	5.31	7.22	4-4	y^5G^o-g^5G
6402.43	P	(1)	5.33	7.26	2-2?	(1344)
10555.63	P	⊂	5.42	6.59	3-4	w^5D^o-g^5F
10362.73	P	⊙	5.45	6.65	2-3	(1345)
10070.58	P	⊂	5.49	6.71	0-1	
10022.34	P	⊙	5.48	6.71	1-1	
9676.42	F	1	5.37	6.65	4-3	
10353.85	P	(2n)	5.37	6.56	4-4	w^5D^o-h^5D
10388.73	P	⊙	5.42	6.61	3-3	(1346)
10283.87	P	⊙	5.48	6.68	1-1	
9951.15	P	⊙	5.37	6.61	4-3	
9953.45	P	⊙	5.42	6.66	3-2	
10348.16	F	4n	5.37	6.56	4-3	w^5D^o-f^5P
10364.13	P	⊙	5.42	6.61	3-2	(1347)
10153.30	P		5.42	6.64	3-4	w^5D^o-f^5G
10019.77	P	⊙	5.45	6.69	2-3	(1348)
10032.84	P	⊙	5.48	6.71	1-2	
9764.40	P	⊙	5.42	6.69	3-3	
6943.67	P	⊙?	5.37	7.15	4-5	w^5D^o-h^7D (1349)
10925.80	D	1	5.46	6.59	5-4	w^5F^o-g^5F (1350)
7430.73	0	(1)	5.46	7.12	5-4	w^5F^o-i^5D (1351)
7526.72	P	⊙	5.48	7.12	4-4	v^5D^o-i^5D
7537.97	P	⊂	5.50	7.14	3-3	(1352)
7461.28	P	⊙	5.48	7.14	4-3	
7448.00	P	⊙	5.50	7.16	3-2	

Additions to Multiplets of Fe I

4232.724	V	1	0.11	2.99	1-2	a^5D-z^7P^o (3)
m3199.50	P	Fe	0.11	3.97	1-2	a^5D-z^3F^o (7)
3418.507	G	10	2.21	5.82	1-0	a^5P-u^5D^o (81)

Strongest Unclassified Lines of Fe I

9666.59	F	2	V
9637.55	F	2	V
9529.31	F	2n	V
9430.08	E	3	IV•
8145.47	0	4	V
8024.50	0	3n	V
7994.473	E	20	IV•
7808.04	0	6n	V
7573.53	0	2n	V
7546.177	L	4	IV•
*7376.434§	R	3n	V
7254.649	V	2	IV•
6975.46	V	3n	V
6902.80	V	3n	V
6881.46	M	1	V
6838.86	V	3n	V
6793.62	M	1	V
6755.609	V	3	IV•
6726.78	D	(3)	
6609.56	V	1	V
6528.53	V	2	V
6501.681	V	4	IV•
6042.098	J	2	V
5036.294	R	6	
4552.544	J	(3)	
4237.162	J	2	V
4100.17	W	(3)	
3851.58	W	(4)	
3739.527	J	3	IV
3681.774	V	1	IV
3680.801	V	1	IV
3656.227	V	3n	IV
3634.698	G	4n	IV
3617.317	J	2	IV
3616.572	J	3n	IV
3614.550	G	2n	IV
3587.752	J	3	IV
3506.40	W	(3)	
3438.306	V	(3w)	
3262.284	V	4	IV
3179.538	V	3	IV
3139.908	V	4n	V
3136.17	W	(3)	
3126.175	G	8n	IV
3102.71	W	(4)	
2991.638	G	5n	IV

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe II I P 16.16	Anal A		List A		July 1941	
3277.347	A	9	0.98	4.75	3½-4½	$a^4D-z^6D^o$
3302.861	A	4	1.04	4.77	2½-3½	(1)
3312.707	C	(1)	1.07	4.80	1½-2½	
3313.996	A	1	1.09	4.82	½-1½	
3255.884	A	8	0.98	4.77	3½-3½	
3281.293	A	7	1.04	4.80	2½-2½	
3295.814	A	6	1.07	4.82	1½-1½	
3303.466	A	4	1.09	4.83	½- ½	
3234.923	A	0	0.98	4.80	3½-2½	
3264.76	P		1.04	4.82	2½-1½	
3285.425	C	(3)	1.07	4.83	1½- ½	
2953.774	A	11	1.04	5.21	2½-3½	$a^4D-z^6F^o$ †
2970.510	A	10	1.07	5.23	1½-2½	(2)
*2979.349	A	8	1.09	5.23	½-1½	
2975.938	A	5	1.09	5.24	½- ½	
2961.272	A	5	1.07	5.24	1½- ½	
3969.40	P		1.66	4.77	2½-3½	$a^4P-z^6D^o$
3969.38	P		1.69	4.80	1½-2½	(3)
3981.61	P		1.72	4.82	½-1½	
3938.289	A	2	1.66	4.80	2½-2½	
3945.21	P		1.69	4.82	1½-1½	
3966.43	P		1.72	4.83	½- ½	
3914.480	A	2	1.66	4.82	2½-1½	
3930.31	P		1.69	4.83	1½- ½	
3475.74	P		1.66	5.21	2½-3½	$a^4P-z^6F^o$
3487.990	A	3	1.69	5.23	1½-2½	(4)
3508.213	A	1	1.72	5.23	½-1½	
3463.974	A	1	1.66	5.23	2½-2½	
3479.914	A	2	1.69	5.23	1½-1½	
3503.474	A	2	1.72	5.24	½- ½	
3456.00	P		1.66	5.23	2½-1½	
3475.25	P		1.69	5.24	1½- ½	
3425.582	A	3	1.66	5.27	2½-3½	$a^4P-z^6P^o$
3381.36	P		1.69	5.34	1½-2½	(5)
3364.22	P		1.72	5.39	½-1½	
3358.78	P		1.66	5.34	2½-2½	
3338.19	P		1.69	5.39	1½-1½	
3316.18	P		1.66	5.39	2½-1½	
*3227.732§	A	13	1.66	5.49	2½-3½	$a^4P-z^4D^o$
3213.311	A	13	1.69	5.53	1½-2½	(6)
3210.449	A	10	1.72	5.56	½-1½	
3192.917	A	9	1.66	5.53	2½-2½	
3186.740	A	11	1.69	5.56	1½-1½	
3193.809	A	11	1.72	5.58	½- ½	
3166.670	A	4	1.66	5.56	2½-1½	
3170.337	A	6	1.69	5.58	1½- ½	
3196.070	A	10	1.66	5.52	2½-3½	$a^4P-z^4F^o$
3183.115	A	8	1.69	5.57	1½-2½	(7)
3185.315	A	5	1.72	5.59	½-1½	
3163.091	A	5	1.66	5.57	2½-2½	
*3161.945§	C	(5)	1.69	5.59	1½-1½	
3142.220	A	0	1.66	5.59	2½-1½	
2984.831	A	15	1.66	5.80	2½-3½	$a^4P-z^4P^o$ †
2965.036	A	10	1.69	5.85	1½-1½	(8)
2964.629	A	9	1.72	5.88	½- ½	
3002.650	A	13	1.69	5.80	1½-2½	
2985.545	A	13	1.72	5.85	½-1½	
4420.75	P		1.96	4.75	4½-4½	$a^2G-z^6D^o$
4484.93	P		2.02	4.77	3½-3½	(9)
4381.79	P		1.96	4.77	4½-3½	
4445.26	P		2.02	4.80	3½-2½	
4525.75	P		2.02	4.75	3½-4½	
3521.64	P		1.96	5.46	4½-4½	$a^2G-z^4F^o$
3522.05	P		2.02	5.52	3½-3½	(10)
3458.13	P		1.96	5.52	4½-3½	
3482.05	P		2.02	5.57	3½-2½	
3587.95	P		2.02	5.46	3½-4½	
4818.26	P		2.27	4.83	1½- ½	$a^2P-z^6D^o$ (11)
4169.98	P		2.27	5.23	1½-2½	$a^2P-z^6F^o$
4251.49	P		2.33	5.23	½-1½	(12)
4158.45	P		2.27	5.23	1½-1½	
4244.53	P		2.33	5.24	½- ½	
4151.79	P		2.27	5.24	1½- ½	
4018.49	P		2.27	5.34	1½-2½	$a^2P-z^6P^o$
4041.84	P		2.33	5.39	½-1½	(13)
3957.66	P		2.27	5.39	1½-1½	
3783.347	A	4	2.27	5.53	1½-2½	$a^2P-z^4D^o$
3821.92	P		2.33	5.56	½-1½	(14)
3746.56	P		2.27	5.56	1½-1½	
3798.36	P		2.33	5.58	½- ½	
3723.92	P		2.27	5.58	1½- ½	
3741.56	P		2.27	5.57	1½-2½	$a^2P-z^4F^o$
3786.37	P		2.33	5.59	½-1½	(15)
3712.39	P		2.27	5.59	1½-1½	
3494.672	A	5	2.27	5.80	1½-2½	$a^2P-z^4P^o$
3507.387	A	3	2.33	5.85	½-1½	(16)
3443.83	P		2.27	5.85	1½-1½	
3478.55	P		2.33	5.88	½- ½	
3416.021	A	5	2.27	5.88	1½- ½	
4622.40	P		2.51	5.18	5½-5½	$a^2H-z^6F^o$
4691.55	P		2.57	5.20	4½-4½	(17)
4591.26	P		2.51	5.20	5½-4½	
4664.79	P		2.57	5.21	4½-3½	
4734.07	P		2.57	5.18	4½-5½	
5696.11	P		2.63	4.80	1½-2½	$a^2D-z^6D^o$ (18)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe II continued						
4602.75	P		2.53	5.21	2½-3½	$a^2D-z^6F^o$
4583.13	P		2.53	5.23	2½-2½	(19)
4515.19	P		2.53	5.27	2½-3½	$a^2D-z^6P^o$
4558.58	P		2.63	5.34	1½-2½	(20)
4399.86	P		2.53	5.34	2½-2½	
4480.46	P		2.63	5.39	1½-1½	
4327.04	P		2.53	5.39	2½-1½	
4177.70	P		2.53	5.49	2½-3½	$a^2D-z^4D^o$
4258.35	P		2.63	5.53	1½-2½	(21)
4119.53	P		2.53	5.53	2½-2½	
4211.80	P		2.63	5.56	1½-1½	
4075.95	P		2.53	5.56	2½-1½	
4183.20	P		2.63	5.58	1½- ½	
4134.793	A	1	2.53	5.52	2½-3½	$a^2D-z^4F^o$
4205.48	P		2.63	5.57	1½-2½	(22)
4070.03	P		2.53	5.57	2½-2½	
4168.66	P		2.63	5.59	1½-1½	
4035.54	P		2.53	5.59	2½-1½	
3779.58	P		2.53	5.80	2½-2½	$a^2D-z^4P^o$
3833.02	P		2.63	5.85	1½-1½	(23)
3730.17	P		2.53	5.85	2½-1½	
3798.60	P		2.63	5.88	1½- ½	
3896.11	P		2.63	5.80	1½-2½	
5607.12	P		2.57	4.77	2½-3½	$b^4P-z^6D^o$
5864.54	P		2.69	4.80	1½-2½	(24)
6021.18	P		2.77	4.82	½-1½	
5545.26	P		2.57	4.80	2½-2½	
5811.93	P		2.69	4.82	1½-1½	
5986.54	P		2.77	4.83	½- ½	
5498.19	P		2.57	4.82	2½-1½	
5779.65	P		2.69	4.83	1½- ½	
4670.170	A	0	2.57	5.21	2½-3½	$b^4P-z^6F^o$
4871.27	P		2.69	5.23	1½-2½	(25)
5000.73	P		2.77	5.23	½-1½	
4648.933	A	?0	2.57	5.23	2½-2½	
4855.54	P		2.69	5.23	1½-1½	
4991.11	P		2.77	5.24	½- ½	
4634.60	P		2.57	5.23	2½-1½	
4846.47	P		2.69	5.24	1½- ½	
4580.055	A	1	2.57	5.27	2½-3½	$b^4P-z^6P^o$
4665.80	P		2.69	5.34	1½-2½	(26)
4713.18	P		2.77	5.39	½-1½	
4461.43	P		2.57	5.34	2½-2½	
4583.99	P		2.69	5.39	1½-1½	
4386.57	P		2.57	5.39	2½-1½	
4233.167	A	11	2.57	5.49	2½-3½	$b^4P-z^4D^o$
4351.764	A	9	2.69	5.53	1½-2½	(27)
4416.817	A	7	2.77	5.56	½-1½	
4173.450	A	8	2.57	5.53	2½-2½	
4303.166	A	8	2.69	5.56	1½-1½	
4385.381	A	7	2.77	5.58	½- ½	
4138.735	A	3	2.57	5.56	2½-1½	
4273.317	A	3	2.69	5.58	1½- ½	
4178.855	A	8	2.57	5.52	2½-3½	$b^4P-z^4F^o$
4296.567	A	6	2.69	5.57	1½-2½	(28)
4369.404	A	2	2.77	5.59	½-1½	
4132.638	A	4	2.57	5.57	2½-2½	
4258.155	A	3	2.69	5.59	1½-1½	
4087.27	P		2.57	5.59	2½-1½	
3824.913	A	4	2.57	5.80	2½-2½	$b^4P-z^4P^o$
3908.54	P		2.69	5.85	1½-1½	(29)
3964.57	P		2.77	5.88	½- ½	
m3764.09	P	Fe	2.57	5.85	2½-1½	
3872.76	P		2.69	5.88	1½- ½	
3974.160	A	3	2.69	5.80	1½-2½	
4002.073	A	2	2.77	5.85	½-1½	
4825.71	P		2.62	5.18	6½-5½	$a^4H-z^6F^o$
4833.21	P		2.65	5.20	5½-4½	(30)
4840.00	P		2.66	5.21	4½-3½	
4847.61	P		2.68	5.23	3½-2½	
4867.73	P		2.65	5.18	5½-5½	
4868.82	P		2.66	5.20	4½-4½	
4870.71	P		2.68	5.21	3½-3½	
4903.85	P		2.66	5.18	4½-5½	
4899.90	P		2.68	5.20	3½-4½	
4743.28	P		2.66	5.27	4½-3½	$a^4H-z^6P^o$
4644.09	P		2.68	5.34	3½-2½	(31)
4772.77	P		2.68	5.27	3½-3½	
4384.33	P		2.65	5.46	5½-4½	$a^4H-z^4F^o$
*4314.289§	A	4	2.66	5.52	4½-3½	(32)
4278.128	C	(1)	2.68	5.57	3½-2½	
4413.600	A	0	2.66	5.46	4½-4½	
4338.70	P		2.68	5.52	3½-3½	
4439.13	P		2.68	5.46	3½-4½	
4372.22	P		2.66	5.49	4½-3½	$a^4H-z^4D^o$
4332.88	P		2.68	5.53	3½-2½	(33)
4397.27	P		2.68	5.49	3½-3½	
6239.36	P		2.79	4.77	4½-3½	$b^4F-z^6D^o$ †
6239.34	P		2.82	4.80	3½-2½	(34)
6219.54	P		2.83	4.82	2½-1½	
6217.95	P		2.84	4.83	1½- ½	
5171.62	P		2.79	5.18	4½-5½	$b^4F-z^6F^o$
5178.71	P		2.82	5.20	3½-4½	(35)
5180.53	P		2.83	5.21	2½-3½	
5178.95	P		2.84	5.23	1½-2½	
5132.67	P		2.79	5.20	4½-4½	
5146.13	P		2.82	5.21	3½-3½	
5154.40	P		2.83	5.23	2½-2½	
5161.18	P		2.84	5.23	1½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe II continued						
5100.66	P		2.79	5.21	4½-3½	$b^4F-z^6F^o$
5120.34	P		2.82	5.23	3½-2½	cont
5136.788	A	tr	2.83	5.23	2½-1½	
5150.93	P		2.84	5.24	1½- ½	
4993.355	A	1	2.79	5.27	4½-3½	$b^4F-z^6P^o$
4893.780	A	0n	2.82	5.34	3½-2½	(36)
*5036.92 §	B	2	2.82	5.27	3½-3½	
4629.336	A	7	2.79	5.46	4½-4½	$b^4F-z^4F^o$
4555.890	A	8	2.82	5.52	3½-3½	(37)
4515.337	A	7	2.83	5.57	2½-2½	
4491.401	A	5	2.84	5.59	1½-1½	
4520.235	A	7	2.79	5.52	4½-3½	
4489.185	A	4	2.82	5.57	3½-2½	
4472.921	A	3	2.83	5.59	2½-1½	
4666.750	A	2	2.82	5.46	3½-4½	
4582.835	A	3	2.83	5.52	2½-3½	
4534.166	A	2	2.84	5.57	1½-2½	
4583.829	A	11	2.79	5.49	4½-3½	$b^4F-z^4D^o$
4549.467	A	10	2.82	5.53	3½-2½	(38)
4532.634	A	9	2.83	5.56	2½-1½	
4508.283	A	8	2.84	5.58	1½- ½	
4620.513	A	3	2.82	5.49	3½-3½	
4576.331	A	4	2.83	5.53	2½-2½	
4541.523	A	4	2.84	5.56	1½-1½	
4648.23	P		2.83	5.49	2½-3½	
4595.68	P		2.84	5.53	1½-2½	
4138.40	P		2.82	5.80	3½-2½	$b^4F-z^4P^o$ †
4088.75	P		2.83	5.85	2½-1½	(39)
4064.75	P		2.84	5.88	1½- ½	
4160.62	P		2.83	5.80	2½-2½	
4104.18	P		2.84	5.85	1½-1½	
6516.053	B	20	2.88	4.77	2½-3½	$a^6S-z^6D^o$
6432.654	B	8	2.88	4.80	2½-2½	(40)
6369.45	B	4	2.88	4.82	2½-1½	
5284.092	A	3	2.88	5.21	2½-3½	$a^6S-z^6F^o$
5256.89	P	1	2.88	5.23	2½-2½	(41)
5238.58	P		2.88	5.23	2½-1½	
5169.030	A	12	2.88	5.27	2½-3½	$a^6S-z^6P^o$
5018.434	A	12	2.88	5.34	2½-2½	(42)
4923.921	A	12	2.88	5.39	2½-1½	
*4731.439§	A	3	2.88	5.49	2½-3½	$a^6S-z^4D^o$
4656.974	A	1	2.88	5.53	2½-2½	(43)
4601.34	P		2.88	5.56	2½-1½	
4663.700	A	0	2.88	5.52	2½-3½	$a^6S-z^4F^o$ (44)
4227.14	P		2.88	5.80	2½-2½	$a^6S-z^4P^o$
4152.98	P		2.88	5.85	2½-1½	(45)
6044.53	P		3.14	5.18	5½-5½	$a^4G-z^6F^o$
6129.71	P		3.19	5.20	4½-4½	(46)
6150.10	P		3.21	5.21	3½-3½	
6141.01	P		3.22	5.23	2½-2½	
5991.383	B	10	3.14	5.20	5½-4½	
6084.11	B	5	3.19	5.21	4½-3½	
6113.33	B	2	3.21	5.23	3½-2½	
6116.04	P		3.22	5.23	2½-1½	
6185.34	P		3.19	5.18	4½-5½	
6196.71	P		3.21	5.20	3½-4½	
6178.13	P		3.22	5.21	2½-3½	
5932.05	P		3.19	5.27	4½-3½	$a^4G-z^6P^o$ †
5793.16	P		3.21	5.34	3½-2½	(47)
5691.38	P		3.22	5.39	2½-1½	
5362.864	A	5	3.19	5.49	4½-3½	$a^4G-z^4D^o$
5316.777	A	4	3.21	5.53	3½-2½	(48)
5264.801	A	2	3.22	5.56	2½-1½	
5414.089	A	2	3.21	5.49	3½-3½	
5337.713	A	0	3.22	5.53	2½-2½	
5435.79	P		3.22	5.49	2½-3½	
5316.609	A	8	3.14	5.46	5½-4½	$a^4G-z^4F^o$
5275.994	A	7	3.19	5.52	4½-3½	(49)
5234.620	A	7	3.21	5.57	3½-2½	
5197.569	A	6	3.22	5.59	2½-1½	
5425.269	A	2	3.19	5.46	4½-4½	
5325.559	A	2	3.21	5.52	3½-3½	
5254.92	P		3.22	5.57	2½-2½	
5477.67	P		3.21	5.46	3½-4½	
5346.56	P	1	3.22	5.52	2½-3½	
4763.79	P		3.21	5.80	3½-2½	$a^4G-z^4P^o$
4780.60	P		3.22	5.80	2½-2½	(50)
4685.95	P		3.22	5.85	2½-1½	
5728.74	P		3.18	5.34	1½-2½	$b^2P-z^6P^o$
5605.91	P		3.18	5.39	1½-1½	(51)
5990.59	P		3.32	5.39	½-1½	
5263.48	P		3.18	5.53	1½-2½	$b^2P-z^4D^o$
5519.83	P		3.32	5.56	½-1½	(52)
5191.58	P		3.18	5.56	1½-1½	
5470.81	P		3.32	5.58	½- ½	
5148.19	P		3.18	5.58	1½- ½	
5181.97	P		3.18	5.57	1½-2½	$b^2P-z^4F^o$
5445.97	P		3.32	5.59	½-1½	(53)
5126.19	P		3.18	5.59	1½-1½	
4720.15	P		3.18	5.80	1½-2½	$b^2P-z^4P^o$
4886.92	P		3.32	5.85	½-1½	(54)
4627.86	P		3.18	5.85	1½-1½	
4831.11	P		3.32	5.88	½- ½	
4577.78	P		3.18	5.88	1½- ½	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe II continued						
5534.860	A	4	3.23	5.46	5½-4½	$b^2H\text{-}z^4F^o$
5432.96	P		3.25	5.52	4½-3½	(55)
5591.36	P		3.25	5.46	4½-4½	
5525.14	P		3.25	5.49	4½-3½	$b^2H\text{-}z^4D^o$
						(56)
5909.38	P		3.37	5.46	3½-4½	$a^2F\text{-}z^4F^o$
5834.93	P		3.41	5.52	2½-3½	(57)
5732.72	P		3.37	5.52	3½-3½	
5725.95	P		3.41	5.57	2½-2½	
5627.49	P		3.37	5.57	3½-2½	
5657.92	P		3.41	5.59	2½-1½	
5835.43	P		3.37	5.49	3½-3½	$a^2F\text{-}z^4D^o$
5824.40	P		3.41	5.53	2½-2½	(58)
5722.56	P		3.37	5.53	3½-2½	
5737.68	P		3.41	5.56	2½-1½	
5941.36	P		3.41	5.49	2½-3½	
3031.407	A	1	3.37	7.46	3½-2½	$a^2F\text{-}y^4D^o$
2965.395	A	2	3.41	7.57	2½-1½	(59)
2984.89	P		3.37	7.51	3½-4½	$a^2F\text{-}z^4G^o$
2998.655	A	2	3.41	7.53	2½-3½	(60)
2971.616	A	1	3.37	7.53	3½-3½	
2991.244	A	0	3.41	7.54	2½-2½	
2964.131	A	7	3.37	7.54	3½-2½	
2968.738	A	2	3.37	7.53	3½-4½	$a^2F\text{-}z^4H^o$
•2980.963	A	4	3.41	7.55	2½-3½	(61)
2954.050	A	4	3.37	7.55	3½-3½	
2959.601	A	7	3.37	7.54	3½-2½	$a^2F\text{-}z^2D^o$ †
•2986.617§	A	4	3.41	7.54	2½-2½	(62)
6983.54	P		3.80	5.57	3½-2½	$b^2G\text{-}z^4F^o$
						(63)
3327.63	P		3.60	7.51	3½-4½	$b^2G\text{-}z^4G^o$
						(64)
3277.853	A	0	3.75	7.52	4½-5½	$b^2G\text{-}z^4H^o$
3307.57	P		3.80	7.53	3½-4½	(65)
3266.938	A	4	3.75	7.53	4½-4½	
3289.347	A	7	3.80	7.55	3½-3½	
3249.16	P		3.75	7.55	4½-3½	
3154.201	A	12	3.75	7.66	4½-4½	$b^2G\text{-}z^2G^o$
3167.653	A	11	3.80	7.69	3½-3½	(66)
3130.561	A	2	3.75	7.69	4½-3½	
3192.059	A	3	3.80	7.66	3½-4½	
3146.748	A	2	3.75	7.67	4½-4½	$b^2G\text{-}y^4F^o$
m3193.65	P	Fe+	3.79	7.66	3½-3½	(67)
3155.950	A	2	3.75	7.66	4½-3½	
3165.095	A	1	3.80	7.67	3½-2½	
3164.43	P		3.80	7.67	3½-4½	
3070.692	A	4	3.75	7.77	4½-3½	$b^2G\text{-}x^4D^o$
3075.228	A	2	3.80	7.61	3½-2½	(68)
3106.559	A	4	3.80	7.77	3½-3½	
2985.29	P		3.75	7.69	4½-5½	$b^2G\text{-}y^4G^o$
3013.59	P		3.80	7.89	3½-4½	(69)
2978.850	A	2	3.75	7.89	4½-4½	
3004.249	A	2	3.80	7.91	3½-3½	
2970.683	A	5	3.75	7.91	4½-3½	
3000.059	A	5	3.80	7.91	3½-2½	
2969.934	A	8	3.80	7.95	3½-2½	$b^2G\text{-}z^2F^o$ †
2982.239	A	3	3.80	7.94	3½-3½	(70)
9403.36	P		3.89	5.20	3½-4½	$b^4D\text{-}z^6F^o$ †
9214.65	P		3.87	5.21	2½-3½	(71)
9112.95	P		3.67	5.23	1½-2½	
9061.33	P		3.67	5.23	½-1½	
7841.40	P		3.89	5.48	3½-4½	$b^4D\text{-}z^4F^o$ †
7479.70	P		3.87	5.52	2½-3½	(72)
7289.05	P		3.67	5.57	1½-2½	
7181.21	P		3.87	5.59	½-1½	
7533.42	B	2	3.89	5.52	3½-3½	
7301.57	P	2	3.87	5.57	2½-2½	
7179.16	P		3.67	5.59	1½-1½	
7711.71	B	15	3.89	5.49	3½-3½	$b^4D\text{-}z^4D^o$
7463.38	B	20	3.87	5.53	2½-2½	(73)
•7307.97 §	B	50	3.87	5.56	1½-1½	
7224.51	B	12	3.87	5.58	½- ½	
7515.88	B	6	3.89	5.53	3½-2½	
•7320.70 §	B	40	3.87	5.56	2½-1½	
7222.39	B	6	3.87	5.58	1½- ½	
7655.47	B	1	3.87	5.49	2½-3½	
7449.34	B	6	3.87	5.53	1½-2½	
7310.24	B	6	3.87	5.56	½-1½	
6456.376	A	200	3.89	5.80	3½-2½	$b^4D\text{-}z^4P^o$
6247.562	A	80	3.87	5.65	2½-1½	(74)
•6147.735§	A	30?	3.87	5.66	1½- ½	
6416.905	A	20	3.87	5.80	2½-2½	
6238.375	A	20	3.87	5.85	1½-1½	
6149.238	A	20	3.87	5.88	½- ½	
6407.30	B	1	3.87	5.80	1½-2½	
6239.95	P	2n	3.87	5.85	½-1½	
3535.628	A	2	3.67	7.37	2½-1½	$b^4D\text{-}z^4S^o$
3532.69	P		3.67	7.37	1½-1½	(75)
3533.19	P		3.67	7.37	½-1½	
3456.998	A	5	3.89	7.46	3½-2½	$b^4D\text{-}y^4P^o$
3338.522	A	3	3.67	7.57	2½-1½	(76)
3389.349	A	3	3.67	7.53	1½- ½	
3445.58	P		3.87	7.46	2½-2½	
3335.90	P		3.87	7.57	1½-1½	
3389.80	P		3.67	7.53	½- ½	
3442.79	P		3.67	7.46	1½-2½	
3336.34	P		3.87	7.57	½-1½	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe II continued						
3366.134	A	?2	3.89	7.53	3½-4½	$b^4D\text{-}z^4H^o$
3358.252	A	3	3.87	7.55	2½-3½	(77)
3376.24	P		3.89	7.54	3½-2½	$b^4D\text{-}z^2D^o$
3353.40	P		3.87	7.67	2½-1½	(78)
3350.34	P		3.67	7.67	½-1½	
3365.413	A	1	3.67	7.54	2½-2½	
3349.911	A	1	3.67	7.67	1½-1½	
3362.764	A	0	3.67	7.54	1½-2½	
3305.634	A	1	3.89	7.62	3½-3½	$b^4D\text{-}y^4D^o$
3193.76	P		3.87	7.74	2½-2½	(79)
3163.66	P		3.87	7.77	1½-1½	
3177.65	P		3.67	7.76	½- ½	
3303.509	A	1	3.89	7.74	3½-2½	
3166.22	P		3.67	7.77	2½-1½	
3177.260	A	1	3.87	7.76	1½- ½	
•3295.240 §	A	4	3.67	7.62	2½-3½	
3191.374	A	1	3.67	7.74	1½-2½	
3164.26	P		3.87	7.77	½-1½	
3267.035	A	3	3.89	7.66	3½-4½	$b^4D\text{-}z^2G^o$
3231.702	A	5	3.67	7.69	2½-3½	(80)
3241.685	A	2	3.69	7.69	3½-3½	
3259.048	A	10	3.89	7.67	3½-4½	$b^4D\text{-}y^4F^o$
3258.773	A	10	3.67	7.66	2½-3½	(81)
3247.171	A	9	3.67	7.67	1½-2½	
3237.615	A	6	3.67	7.68	½-1½	
3268.93	P		3.89	7.66	3½-3½	
3249.657	A	4	3.67	7.67	2½-2½	
3237.402	A	5	3.67	7.68	1½-1½	
3259.75	P		3.69	7.67	3½-2½	
3239.87	P		3.67	7.68	2½-1½	
3177.531	A	10	3.89	7.77	3½-3½	$b^4D\text{-}x^4D^o$
3135.360	A	9	3.87	7.61	2½-2½	(82)
3114.295	A	7	3.67	7.63	1½-1½	
3105.548	A	5	3.87	7.65	½- ½	
3144.751	A	5	3.89	7.61	3½-2½	
•3116.590§	A	6	3.67	7.63	2½-1½	
•3105.166	A	5	3.87	7.65	1½- ½	
3167.94	P		3.67	7.77	2½-3½	
3133.048	A	4	3.87	7.61	1½-2½	
3114.680	A	4	3.87	7.83	½-1½	
3070.591	A	tr	3.69	7.91	3½-3½	$b^4D\text{-}y^4G^o$
						(83)
3047.60	P		3.69	7.94	3½-3½	$b^4D\text{-}z^2F^o$
3025.99	P		3.67	7.95	2½-2½	(84)
3034.712	A	0	3.69	7.95	3½-2½	
3036.777	A	3	3.67	7.94	2½-3½	
3023.859	A	1	3.67	7.95	1½-2½	
2997.749	A	tr d	3.89	8.00	3½-4½	$b^4D\text{-}y^2G^o$
						(85)
2989.01	P		3.67	6.00	2½-1½	$b^4D\text{-}z^2P^o$
2969.367	A	tr	3.67	8.00	1½- ½	(86)
2966.91	P		3.67	6.00	1½-1½	
2989.731	A	0	3.67	6.00	½- ½	
2967.27	P		3.67	6.00	½-1½	
7638.09	P		3.95	5.52	3½-3½	$b^2F\text{-}z^4F^o$ †
7534.63	P		3.93	5.57	2½-2½	(87)
3519.73	P		3.95	7.46	3½-2½	$b^2F\text{-}y^4P^o$
3386.452	A	1	3.93	7.57	2½-1½	(88)
3496.67	P		3.93	7.46	2½-2½	
3470.242	A	1n	3.95	7.51	3½-4½	$b^2F\text{-}z^4G^o$
3430.15	P		3.93	7.53	2½-3½	(89)
3452.33	P		3.95	7.53	3½-3½	
3420.164	A	0	3.93	7.54	2½-2½	
3442.239	A	3	3.95	7.54	3½-2½	
3448.433	A	1	3.95	7.53	3½-4½	$b^2F\text{-}z^4H^o$
3406.76	P		3.93	7.55	2½-3½	(90)
3428.64	P		3.95	7.55	3½-3½	
3436.112	A	5	3.95	7.54	3½-2½	$b^2F\text{-}z^2D^o$
3397.886	A	5	3.93	7.67	2½-1½	(91)
3414.144	A	2	3.93	7.54	2½-2½	
3323.066	A	8	3.95	7.66	3½-4½	$b^2F\text{-}z^2G^o$
3276.606	A	5	3.93	7.69	2½-3½	(92)
•3296.626§	A	2	3.95	7.69	3½-3½	
3314.80	P		3.95	7.67	3½-4½	$b^2F\text{-}y^4F^o$
3304.433	A	1	3.93	7.66	2½-3½	(93)
3325.012	A	1	3.95	7.66	3½-3½	
3295.06	P		3.93	7.67	2½-2½	
3315.53	P		3.95	7.67	3½-2½	
3264.996	A	0	3.93	7.68	2½-1½	
3257.358	A	1	3.95	7.74	3½-2½	$b^2F\text{-}y^4D^o$
						(94)
3230.496	A	1	3.95	7.77	3½-3½	$b^2F\text{-}x^4D^o$
3177.61	P		3.93	7.61	2½-2½	(95)
3196.63	P		3.95	7.81	3½-2½	
3158.32	P		3.93	7.63	2½-1½	
3211.072	A	1	3.93	7.77	2½-3½	
3129.013	A	1	3.95	7.69	3½-4½	$b^2F\text{-}y^4G^o$
3120.023	A	1	3.95	7.91	3½-3½	(96)
3097.415	A	2	3.93	7.91	2½-2½	
3115.493	A	1	3.95	7.91	3½-2½	
3098.296	A	5	3.95	7.94	3½-3½	$b^2F\text{-}z^2F^o$
3085.315	A	6	3.93	7.95	2½-2½	(97)
3063.034	A	3	3.95	7.95	3½-2½	
m3078.44	P	Fe	3.93	7.94	2½-3½	
3044.643	A	5	3.95	6.00	3½-4½	$b^2F\text{-}y^2G^o$
3002.330	A	5	3.93	6.04	2½-3½	(98)
3037.38	P		3.93	6.00	2½-1½	$b^2F\text{-}z^2P^o$
						(99)

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe II continued						
•2979.096	A	3	3.95	8.09	3½-4½	$b^2F\text{-}z^2H^o$
						(100)
3603.60	P		4.06	7.48	6½-5½	$a^2I\text{-}z^4G^o$
3583.54	P		4.06	7.51	5½-4½	(101)
3607.05	P		4.06	7.48	5½-5½	
3511.25	P		4.06	7.57	6½-7½	$a^2I\text{-}z^4I^o$
3493.34	P		4.06	7.60	5½-6½	(102)
3489.17	P		4.06	7.60	6½-6½	
3486.08	P		4.06	7.60	5½-5½	
3481.92	P		4.06	7.60	6½-5½	
3495.16	P		4.06	7.59	5½-4½	
3426.81	P		4.06	7.66	5½-4½	$a^2I\text{-}z^2G^o$
						(103)
3418.02	P		4.06	7.67	5½-4½	$a^2I\text{-}y^4F^o$
						(104)
3396.355	A	4	4.06	7.69	6½-6½	$a^2I\text{-}z^2I^o$
3360.103	A	3	4.06	7.74	5½-5½	(105)
m3356.24	P	Fe+	4.06	7.74	6½-5½	
3402.32	P		4.06	7.69	5½-6½	
3220.635	A	0	4.06	7.69	5½-4½	$a^2I\text{-}y^4G^o$
						(106)
3131.719	A	4	4.06	8.00	5½-4½	$a^2I\text{-}y^2G^o$
						(107)
3077.168	A	10	4.06	8.07	6½-5½	$a^2I\text{-}z^2H^o$
3062.234	A	9	4.06	8.09	5½-4½	(108)
3060.405	A	2	4.06	8.07	5½-5½	
3056.602	A	5	4.06	8.10	6½-5½	$a^2I\text{-}x^4G^o$
3049.16	P		4.06	8.11	5½-4½	(109)
3060.023	A	0	4.06	8.10	5½-5½	
3020.001	A	?0	4.06	8.15	5½-4½	$a^2I\text{-}x^4F^o$
						(110)
3680.98	P		4.13	7.48	4½-5½	$c^2G\text{-}z^4G^o$
3661.17	P		4.14	7.51	3½-4½	(111)
3656.50	P		4.13	7.51	4½-4½	
3641.22	P		4.14	7.53	3½-3½	
3636.61	P		4.13	7.53	4½-3½	
3629.99	P		4.14	7.54	3½-2½	
3645.78	P		4.13	7.52	4½-5½	$c^2G\text{-}z^4H^o$
3636.90	P		4.14	7.53	3½-4½	(112)
3632.292	A	3	4.13	7.53	4½-4½	
3614.673	A	5	4.14	7.55	3½-3½	
3610.33	P		4.13	7.55	4½-3½	
3555.06	P		4.13	7.60	4½-5½	$c^2G\text{-}z^4I^o$
3566.97	P		4.14	7.59	3½-4½	(113)
3564.54	P		4.13	7.59	4½-4½	
3493.468	A	10	4.13	7.66	4½-4½	$c^2G\text{-}z^2G^o$
3468.680	A	6	4.14	7.69	3½-3½	(114)
3464.497	A	3	4.13	7.69	4½-3½	
3497.73	P		4.14	7.66	3½-4½	
•3484.348§	A	1	4.13	7.67	4½-4½	$c^2G\text{-}y^4F^o$
3499.677	A	4	4.14	7.66	3½-3½	(115)
3495.616	A	4	4.13	7.66	4½-3½	
3424.17	P		4.13	7.74	4½-5½	$c^2G\text{-}z^2I^o$
						(116)
3391.303	A	1	4.13	7.77	4½-3½	$c^2G\text{-}x^4D^o$
3357.965	A	0	4.14	7.61	3½-2½	(117)
3395.336	A	4	4.14	7.77	3½-3½	
3287.468	A	1	4.13	7.69	4½-5½	$c^2G\text{-}y^4G^o$
3263.40	P		4.14	7.69	3½-4½	(118)
3279.649	A	2	4.13	7.89	4½-4½	
3273.499	A	3	4.14	7.91	3½-3½	
3269.772	A	2	4.13	7.91	4½-3½	
3268.512	A	3	4.14	7.91	3½-2½	
3243.723	A	6	4.13	7.94	4½-3½	$c^2G\text{-}z^2F^o$
3232.791	A	7	4.14	7.95	3½-2½	(119)
3247.392	A	3	4.14	7.94	3½-3½	
3167.294	A	8	4.13	8.00	4½-4½	$c^2G\text{-}y^2G^o$
3162.799	A	6	4.14	8.04	3½-3½	(120)
3159.32	P		4.13	8.04	4½-3½	
3190.64	P		4.14	8.00	3½-4½	
3134.17	P		4.13	6.07	4½-5½	$c^2G\text{-}z^2H^o$ †
3116.74	P		4.14	6.09	3½-4½	(121)
3079.356	A	0	4.13	8.14	4½-3½	$c^2G\text{-}x^4G^o$
3068.757	A	2	4.14	8.16	3½-2½	(122)
•3105.166	A	5	4.14	8.11	3½-4½	
3071.653	A	2	4.13	8.15	4½-4½	$c^2G\text{-}x^4F^o$
3040.689	A	0	4.14	8.19	3½-3½	(123)
3029.681	A	0	4.13	8.20	4½-5½	$c^2G\text{-}y^4H^o$
3013.802	A	0	4.14	8.23	3½-3½	(124)
4270.39	P		4.48	7.36	2½-1½	$b^2D\text{-}z^4S^o$
4247.43	P		4.46	7.36	1½-1½	(125)
4046.61	P		4.48	7.53	2½-3½	$b^2D\text{-}z^4G^o$
4012.467	A	1	4.46	7.54	1½-2½	(126)
4032.946	A	3	4.48	7.54	2½-3½	
4024.552	A	5	4.48	7.54	2½-2½	$b^2D\text{-}z^2D^o$
m3845.18	P	Fe	4.46	7.67	1½-1½	(127)
•3863.953	A	1	4.48	7.67	2½-1½	
4004.15	P		4.46	7.54	1½-2½	
3873.96	P		4.48	7.66	2½-3½	$b^2D\text{-}y^4F^o$
3841.35	P		4.46	7.67	1½-2½	(128)
3860.12	P		4.48	7.67	2½-2½	
3827.67	P		4.46	7.68	1½-1½	
3846.31	P		4.48	7.68	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe II continued						
3834.81	P		4.48	7.69	2½-3½	$b^2D-z^2G^o$ (129)
3781.510	A	1	4.48	7.74	2½-2½	$b^2D-y^4D^o$
3725.304	A	3	4.46	7.77	1½-1½	(130)
3745.36	P		4.48	7.77	2½-3½	$b^2D-x^4D^o$
3682.66	P		4.46	7.81	1½-2½	(131)
3699.90	P		4.48	7.81	2½-3½	
3656.77	P		4.46	7.83	1½-1½	
3673.77	P		4.48	7.83	2½-1½	
3644.19	P		4.46	7.85	½- ½	
3566.148	A	3	4.48	7.94	2½-3½	$b^2D-z^2F^o$
3532.647	A	2	4.46	7.95	1½-2½	(132)
3548.55	P		4.48	7.95	2½-2½	
m3497.81	P	Fe	4.48	8.00	2½-1½	$b^2D-z^2P^o$
3485.728	A	1	4.46	8.00	1½- ½	(133)
3482.39	P		4.46	8.00	1½-1½	
3368.447	A	tr	4.48	8.14	2½-3½	$b^2D-x^4G^o$ (134)
3318.862	A	0	4.46	8.18	1½- ½	$b^2D-z^2S^o$ (135)
3318.62	P		4.48	8.19	2½-3½	$b^2D-x^4F^o$
3292.89	P		4.48	8.22	2½-1½	(136)
m3251.34	P	Fe	4.48	8.27	2½-2½	$b^2D-y^2D^o$
3209.603	A	1	4.46	8.30	1½-1½	(137)
3043.31	P		4.48	8.53	2½-2½	$b^2D-x^4P^o$
3013.38	P		4.46	8.56	1½-1½	(138)
3024.92	P		4.48	8.56	2½-1½	
3002.09	P		4.46	8.57	1½- ½	
3031.63	P		4.46	8.53	1½-2½	
2997.298	A	7	4.48	8.59	2½-3½	$b^2D-y^2F^o$
2982.059	A	8	4.46	8.60	1½-2½	(139)
2993.366	A	1n	4.48	8.60	2½-2½	
4455.85	P		4.60	7.37	½-1½	$a^2S-z^4S^o$ (140)
4147.26	P		4.60	7.57	½-1½	$a^2S-y^4P^o$
4199.09	P		4.60	7.53	½- ½	(141)
4015.20	P		4.60	7.67	½-1½	$a^2S-z^2P^o$ (142)
3810.21	P		4.60	7.83	½-1½	$a^2S-x^4D^o$
3796.55	P		4.60	7.85	½- ½	(143)
3621.273	A	6	4.60	8.00	½-1½	$a^2S-z^2P^o$
3624.890	A	5	4.60	8.00	½- ½	(144)
3444.76	P		4.60	8.18	½- ½	$a^2S-z^2S^o$ (145)
4650.04	P		4.71	7.37	2½-1½	$c^2D-z^4S^o$
4660.93	P		4.72	7.37	1½-1½	(146)
4495.52	P		4.71	7.46	2½-2½	$c^2D-y^4P^o$†
4324.36	P		4.72	7.57	1½-1½	(147)
4360.03	P		4.71	7.54	2½-2½	$c^2D-z^2P^o$
4180.97	P		4.72	7.67	1½-1½	(148)
4172.20	P		4.71	7.67	2½-1½	
4369.61	P		4.72	7.54	1½-2½	
4182.69	P		4.71	7.66	2½-3½	$c^2D-y^4F^o$
4176.44	P		4.72	7.67	1½-2½	(149)
4167.69	P		4.71	7.67	2½-2½	
4160.28	P		4.72	7.68	1½-1½	
4151.60	P		4.71	7.68	2½-1½	
4138.21	P		4.71	7.69	2½-3½	$c^2D-z^2G^o$ (150)
4031.456	A	1	4.71	7.77	2½-1½	$c^2D-y^4D^o$
4084.58	P		4.72	7.74	1½-2½	(151)
3863.413	A	1	4.71	7.91	2½-3½	$c^2D-y^4G^o$
*3863.953	A	1	4.72	7.91	1½-2½	(152)
3827.079	A	4	4.71	7.94	2½-3½	$c^2D-z^2F^o$
3814.121	A	4	4.72	7.95	1½-2½	(153)
3806.82	P		4.71	7.95	2½-2½	
*3748.489§	A	8	4.71	8.00	2½-1½	$c^2D-z^2P^o$
3759.460	A	6	4.72	8.00	1½- ½	(154)
3755.563	A	4	4.72	8.00	1½-1½	
3566.052	A	2	4.72	8.18	1½- ½	$c^2D-z^2S^o$ (155)
m3466.85	P	Fe	4.71	8.27	2½-2½	$c^2D-y^2D^o$
3440.25	P		4.72	8.30	1½-1½	(156)
3472.886	A	0	4.72	8.27	1½-2½	
*3179.504§	A	8	4.71	8.59	2½-3½	$c^2D-y^2F^o$
*3180.164§	A	7	4.72	8.60	1½-2½	(157)
3175.077	A	4	4.71	8.60	2½-2½	
3089.388	A	4	4.71	8.71	2½-3½	$c^2D-x^2G^o$ (158)
2972.769	A	1	5.46	9.61	4½-4½	$z^4F^o-e^6D$
2989.079	A	tr n	5.57	9.69	2½-2½	(159)
2991.817	A	2n	5.49	9.61	3½-4½	$z^4D^o-e^6D$
2958.528	A	1n	5.49	9.66	3½-3½	(160)
2962.936	A	1n	5.53	9.69	2½-2½	
2968.119	A	0	5.56	9.72	1½-1½	
*2972.016§	A	0	5.58	9.73	½- ½	
6219.35	P		5.54	7.53	3½-4½	$c^2F-z^4H^o$
6160.75	P		5.55	7.55	2½-3½	(161)
6155.24	P		5.54	7.55	3½-3½	
Fe II continued						
6199.16	B	2	5.54	7.54	3½-2½	$c^2F-z^4G^o$ (162)
6179.378	A	5	5.54	7.54	3½-2½	$c^2F-z^2D^o$
5813.67	B	3	5.55	7.67	2½-1½	(163)
3184.94	P		5.55	7.54	2½-2½	
5823.17	B	3	5.54	7.66	3½-4½	$c^2F-z^2G^o$
5747.88	P		5.55	7.69	2½-3½	(164)
5797.81	P		5.54	7.67	3½-4½	$c^2F-y^4F^o$
5834.06	P		5.55	7.66	2½-3½	(165)
5829.12	P		5.54	7.66	3½-3½	
5804.91	P		5.55	7.67	2½-2½	
5800.02	P		5.54	7.67	3½-2½	
5773.75	P		5.55	7.68	2½-1½	
5544.76	P		5.54	7.77	3½-3½	$c^2F-x^4D^o$ (166)
5160.824	A	1	5.54	7.94	3½-3½	$c^2F-z^2F^o$
5127.866	A	1	5.55	7.95	2½-2½	(167)
5134.05	P		5.54	7.95	3½-2½	
5164.69	P		5.55	7.94	2½-3½	
5019.478	A	0	5.54	8.00	3½-4½	$c^2F-y^2G^o$
4953.979	A	0	5.55	8.04	2½-3½	(168)
4810.760	A	0	5.54	8.11	3½-4½	$c^2F-x^4G^o$
4760.15	P		5.55	8.14	2½-3½	(169)
4738.52	P		5.54	8.15	3½-4½	$c^2F-x^4F^o$
4661.19	P		5.55	8.19	2½-3½	(170)
4658.03	P		5.54	8.19	3½-3½	
4629.90	P		5.55	8.21	2½-2½	
4626.78	P		5.54	8.21	3½-2½	
4610.59	P		5.55	8.22	2½-1½	
m4526.58	P	Fe	5.54	8.27	3½-2½	$c^2F-y^2D^o$
4474.194	A	0n	5.55	8.30	2½-1½	(171)
4529.56	P		5.55	8.27	2½-2½	
4048.831	A	3	5.54	8.59	3½-3½	$c^2F-y^2F^o$
m4044.01	P	Fe	5.55	8.60	2½-2½	(172)
4041.64	P		5.54	8.60	3½-2½	
4051.21	P		5.55	8.59	2½-3½	
3935.943	A	6	5.54	8.68	3½-4½	$c^2F-x^2G^o$
3906.037	A	5	5.55	8.71	2½-3½	(173)
3673.35	P		5.54	8.90	3½-4½	$c^2F-x^2H^o$ (174)
3604.21	P		5.54	8.97	3½-3½	$c^2F-w^4D^o$
3610.38	P		5.55	8.96	2½-2½	(175)
3608.49	P		5.54	8.96	3½-2½	
3622.81	P		5.55	8.95	3½-1½	
3606.18	P		5.55	8.97	2½-3½	
3557.548	A	2	5.54	9.01	3½-3½	$c^2F-x^2F^o$
m3554.50	P	Fe	5.55	9.02	2½-2½	(176)
3366.960	A	3	5.54	9.21	3½-2½	$c^2F-x^2D^o$
3381.003	A	4	5.55	9.20	2½-1½	(177)
3368.626	A	0	5.55	9.21	2½-2½	
3257.894	A	3	5.54	9.33	3½-3½	$c^2F-w^2F^o$
3226.378	A	2	5.55	9.37	2½-2½	(178)
3224.86	P		5.54	9.37	3½-2½	
3259.44	P		5.55	9.33	2½-3½	
3045.313	A	0	5.54	9.60	3½-2½	$c^2F-w^2F^o$
3046.675	A	1	5.55	9.60	2½-2½	(179)
2959.841	A	4	5.54	9.71	3½-2½	$c^2F-w^2D^o$
*2979.096	A	3	5.55	9.69	2½-1½	(180)
2961.119	A	tr	5.55	9.71	2½-2½	
3078.698	A	8n	5.80	9.81	2½-3½	$z^4P^o-e^4D$
3076.455	A	6n	5.85	9.86	1½-2½	(181)
3071.141	A	4n	5.88	9.90	½-1½	
3036.986	A	5n	5.80	9.86	2½-2½	
3049.011	A	5n	5.85	9.90	1½-1½	
3055.368	A	4n	5.88	9.92	½- ½	
*3010.220§	A	1	5.80	9.90	2½-1½	
3033.445	A	2n	5.85	9.92	1½- ½	
5952.55	P		5.93	8.00	2½-1½	$d^2D-z^2P^o$
5835.50	P		5.89	8.00	1½- ½	(182)
5826.12	P		5.89	8.00	1½-1½	
5856.45	P		5.93	8.04	2½-3½	$d^2D-y^2G^o$ (183)
5451.60	P		5.93	8.19	2½-3½	$d^2D-x^4F^o$
5304.26	P		5.89	8.21	1½-2½	(184)
5408.842	A	1	5.93	8.21	2½-2½	
5278.955	A	0n	5.89	8.22	1½-1½	
5382.52	P		5.93	8.22	2½-1½	
5272.413	A	2	5.93	8.27	2½-2½	$d^2D-y^2D^o$
5100.840	A	4n	5.89	8.30	1½-1½	(185)
5173.002	A	0	5.89	8.27	1½-2½	
4635.328	A	5	5.93	8.59	2½-3½	$d^2D-y^2F^o$
4549.214	A	4	5.89	8.60	1½-2½	(186)
4625.911	A	1	5.93	8.60	2½-2½	
4446.248	A	1n	5.93	8.71	2½-3½	$d^2D-x^2G^o$ (187)
4111.902	A	1	5.93	8.93	2½-3½	$d^2D-w^4F^o$
4069.883	A	1	5.89	8.92	1½-2½	(188)
4131.17	P		5.93	8.92	2½-2½	
4081.42	P		5.89	8.91	1½-1½	
4143.07	P		5.93	8.91	2½-1½	
4061.787	A	1	5.93	8.97	2½-3½	$d^2D-w^4D^o$
4007.72	P		5.89	8.96	1½-2½	(189)
Fe II continued						
4002.549	A	3	5.93	9.01	2½-3½	$d^2D-x^2F^o$
3938.969	A	4	5.89	9.02	1½-2½	(190)
3996.36	P		5.93	9.02	2½-2½	
3975.029	A	2	5.93	9.04	2½-1½	$d^2D-y^2P^o$
3918.51	P		5.89	9.03	1½- ½	(191)
3762.894	A	5	5.93	9.21	2½-2½	$d^2D-x^2D^o$
m3727.04	P	Fe	5.89	9.20	1½-1½	(192)
3778.37	P		5.93	9.20	2½-1½	
3711.974	A	1	5.89	9.21	1½-2½	
3627.168	A	1	5.93	9.33	2½-3½	$d^2D-w^2F^o$ (193)
3321.491	A	1	5.93	9.65	2½-3½	$d^2D-w^2P^o$
3324.838	A	1	5.89	9.60	1½-2½	(194)
3365.640	A	0	5.93	9.60	2½-2½	
3261.509	A	1	5.93	9.71	2½-2½	$d^2D-w^2D^o$ (195)
3203.741	A	0	5.93	9.78	2½-1½	$d^2D-w^2P^o$ (196)
7287.36	B	6	6.19	7.89	4½-5½	$c^4F-y^4G^o$
7264.99	B	10	6.20	7.89	3½-4½	(197)
7193.23	B	8	6.19	7.91	2½-3½	
7134.99	B	5	6.18	7.91	1½-2½	
6966.9	B	2	6.18	7.95	1½-2½	$c^4F-z^2P^o$ (198)
6482.205	A	1	6.19	8.10	4½-5½	$c^4F-x^4G^o$
6446.43	B	20	6.20	8.11	3½-4½	(199)
6331.969	B	12	6.19	8.14	2½-3½	
6433.85	B	3	6.19	8.11	4½-4½	
6305.318	B	15	6.19	8.15	4½-4½	$c^4F-x^4F^o$
6175.158	B	15	6.20	8.19	3½-3½	(200)
6103.54	B	8	6.19	8.21	2½-2½	
6045.497	B	6	6.18	8.22	1½-1½	
4444.563	A	1	6.19	8.97	4½-4½	$c^4F-w^4F^o$ (201)
4359.12	P		6.19	9.02	4½-4½	$c^4F-w^2G^o$
4355.03	P		6.20	9.03	3½-3½	(202)
4349.28	P		6.19	9.03	4½-3½	
4364.89	P		6.20	9.02	3½-4½	
4346.50	P		6.19	9.03	2½-3½	
6487.43	B	4	6.78	8.68	3½-4½	$d^2F-x^2G^o$
6386.75	B	2	6.77	8.71	2½-3½	(203)
5519.72	P		6.78	9.01	3½-3½	$d^2F-x^2F^o$
5497.70	P		6.77	9.02	2½-2½	(204)
5074.063	A	1	6.78	9.21	3½-2½	$d^2F-x^2D^o$
5093.470	A	1	6.77	9.20	2½-1½	(205)
4830.40	P		6.78	9.33	3½-3½	$d^2F-w^2F^o$
4750.49	P		6.77	9.37	2½-2½	(206)
*3451.614§	A	2	6.78	10.35	3½-2½	$d^2F-v^2D^o$
3390.082	A	2	6.77	10.41	2½-1½	(207)
3451.228	A	2	6.78	10.35	3½-4½	$d^2F-v^2G^o$
3515.818	A	2	6.77	10.28	2½-3½	(208)
7334.66	B	8	7.24	8.92	4½-5½	$d^2G-x^2H^o$
7425.12	P		7.24	8.90	3½-4½	(209)
6677.33	B	3	7.24	9.09	4½-5½	$d^2G-w^2H^o$
6627.28	B	5	7.24	9.10	3½-4½	(210)
5891.36	B	8	7.24	9.33	4½-3½	$d^2G-w^2F^o$
5795.87	B	4n	7.24	9.37	3½-2½	(211)
3960.895	A	3	7.24	10.35	4½-4½	$d^2G-v^2G^o$
4057.457	A	2	7.24	10.28	3½-3½	(212)
4354.358	A	2n	7.62	10.45	3½-3½	$y^4D^o-f^4D$
4507.195	A	0n	7.74	10.48	2½-2½	(213)
4066.328	A	?2	7.67	10.70	1½-1½	$z^2D^o-e^4F$ (214)
5785.0	B	5N	7.67	9.81	4½-3½	$y^4F^o-e^4D$ (215)
4366.165	A	tr	7.67	10.50	2½-1½	$y^4F^o-f^4D$ (216)
6061.04	B	3n	7.77	9.81	3½-3½	$x^4D^o-e^4D$ (217)
4913.366	A	1	7.83	10.35	1½-2½	x^4D^o-32 (218)
4598.528	A	1n	7.77	10.45	3½-3½	$x^4D^o-f^4D$
4628.821	A	0n	7.81	10.48	2½-2½	(219)
4631.895	A	0n	7.83	10.50	1½-1½	
4625.549	A	tr	7.85	10.51	½- ½	
4652.280	A	tr	7.85	10.50	½-1½	
4313.034	A	1n	7.77	10.63	3½-4½	$x^4D^o-e^4F$
4319.717	A	1n	7.81	10.67	2½-3½	(220)
4321.341	A	1n	7.83	10.69	1½-2½	
4318.216	A	0N	7.85	10.70	½-1½	
5081.920	A	tr	7.91	10.33	3½-3½†	y^4G^o-30 (221)
4493.579	A	1n	7.89	10.63	5½-4½	$y^4G^o-e^4F$
4449.663	A	1n	7.89	10.67	4½-3½	(222)
4431.626	A	1n	7.91	10.69	3½-2½	
m4508.26	P	Fe+	7.89	10.63	4½-4½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe II continued						
2987.542	A	1n	8.00	12.13	4½–5½	$y^2G°-e^4H$ (223)
5529.940	A	2	8.18	10.41	½–1½	$z^2S°-e^6P$ (224)
5303.419	A	0n	8.15	10.48	4½–5½	$x^4F°-e^4G$
5315.618	A	0n	8.19	10.52	3½–4½	(225)
5278.265	A	0n	8.21	10.55	2½–3½	
3117.505	A	0	8.19	12.15	3½–4½	$x^4F°-e^4H$ (226)
•3140.692§	A	1	8.20	12.13	5½–5½	$y^4H°-e^4H$
3138.207	A	1n	8.22	12.15	4½–4½	(227)
3300.056	A	tr	8.40	12.13	4½–5½†	$y^2H°-e^4H$ (228)
Strongest Unclassified Lines of **Fe II**						
•7376.46 §	B	20	5070.957	A	2	
7067.44	B	20	5061.794	A	1	
6586.69	B	5	5035.773	A	3	
6517.01	B	5	5032.794	A	1	
6506.33	B	5	•5030.740§§	A	3	
6493.05	B	8	5022.874	A	1	
6491.28	B	4	5004.264	A	3	
6442.97	B	6	4948.848	A	1	
6385.473	B	5	4579.523	A	1	
6383.753	B	15	4480.687	A	1	
6375.96	B	4n	4455.258	A	3	
6248.916	B	4	4451.545	A	4	
6233.52	B	3	4402.875	A	2	
			4368.262	A	1	
5962.4	B	30N	4361.249	A	2	
5956.5	B	4N	4357.574	A	4	
5903.6	B	8N	4331.529	A	3	
5891.9	B	3	4286.311	A	1	
5835.61	B	3n	4263.895	A	1	
5567.815	B	10	3860.915	A	3	
5506.268	A	3	3822.737	A	3	
•5503.397§	A	1	3725.901	A	†2	
			3652.748	A	1	
•5466.94 §	B	30	3624.688	A	2	
5466.031	A	2	•3482.426§§	A	2	
5427.832	B	30	•3473.825§§	A	2	
5402.113	A	2	3453.595	A	2	
5387.136	A	2	3451.318	A	2	
5318.267	A	0	3386.724	A	2	
5318.035	A	1	3356.265	A	2	
5248.028	A	2	•3329.070§	A	2	
5169.733	A	1	•3299.771§§	A	1	
5159.93	B	4				
5156.10	B	6	•3228.600§	A	†3	
5149.538	A	3	3223.444	A	1	
5147.09	B	2	3171.016	A	1	
5117.107	A	0	3165.957	A	3n	
5101.48	B	2N				
5100.95	B	15	3123.715	A	1	
5100.704	A	2	3119.660	A	†1	
5097.375	A	†1	3115.352	A	2	
5093.646	A	1				
5089.278	A	0	3071.270	A	2	
5087.25	B	3	•3063.814§§	A	1	
5075.829	A	1	2968.906	A	2	
			2963.897	A	3n	

Fe III I P 30.48	Anal B	List A	June 1942		
3069.335	B	4	6.21	10.23	4–4	$b^3F-z^7P°$
3120.24	B	1	6.21	10.16	3–3	(1)
•3142.22 §	B	2	6.20	10.12	2–2	
3071.238	B	5	6.21	10.23	3–4	
3109.59	B	1	6.20	10.16	2–3	
5163.74	B	1	7.84	10.23	4–4†	$a^5G-z^7P°$ (2)
6102.59	P		8.31	10.23	3–4	$a^5P-z^7P°$
6322.98	P		8.21	10.16	2–3	(3)
6487.48	P		8.22	10.12	1–2	
6299.74	P		8.21	10.16	3–3	
6458.68	P		8.21	10.12	2–2	
6434.44	P		8.21	10.12	3–2	
4419.59	A	10	8.21	11.00	3–3	$a^5P-z^5P°$
4382.31	B	1	8.21	11.03	2–2	(4)
4365.56	B	3	8.22	11.05	1–1	
4371.10	B	1	8.31	11.03	3–2	
4352.70	B	4	8.21	11.05	2–1	
4430.95	A	7	8.21	11.00	3–3	
4395.78	A	6	8.22	11.03	1–2	
5156.0	A	4	8.60	11.00	4–3	$b^5D-z^5P°$
•5137.32	B	6	8.62	11.03	3–2	(5)
5086.69	B	3	8.62	11.05	2–1	
5193.89	B	4	8.62	11.00	3–3	
•5137.32	B	6	8.62	11.03	2–2	
5073.78	B	3	8.62	11.05	1–1	
5194.43	B	4	8.62	11.00	2–3	
5114.10	B	1	8.62	11.03	1–2	
5063.30	B	2	8.61	11.05	0–1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
.e III continued						
3198.81	A	5	10.17	14.03	3–4	$c^3D-z^5G°$
3204.76	A	6	10.17	14.02	2–3	(6)
3215.60	A	8	10.18	14.02	1–2	
3201.90	A	1	10.17	14.02	3–3	
3206.98	A	4	10.17	14.02	2–2	
3266.88	A	20	10.26	14.04	5–6	$a^5F-z^5G°$
3276.08	A	15	10.27	14.03	4–5	(7)
3288.81	A	15	10.28	14.03	3–4	
3305.22	A	10	10.29	14.02	2–3	
3339.36	A	10	10.33	14.02	1–2	
•3273.53 §	A	6	10.26	14.03	5–5	
3280.58	A	6	10.27	14.03	4–4	
•3292.04§§	A	8	10.28	14.02	3–3	
3307.53	A	5	10.29	14.02	2–2	
3278.04	B	1d	10.26	14.03	5–4	
3283.75	A	2	10.27	14.02	4–3	
3109.32	B	1	10.26	14.23	5–5	$a^5F-z^5H°$
•3129.04 §	B	5	10.27	14.21	4–4†	(8)
3111.609	A	8	10.27	14.23	4–5	
3164.67	A	3	10.29	14.19	2–3	
3013.125	A	20	10.26	14.36	5–5	$a^5F-z^5F°$ †
3001.589	A	12	10.27	14.38	4–4	(9)
3002.99	A	5	10.33	14.44	1–1	
3015.230	A	7	10.27	14.36	4–5	
3008.506	A	5	10.28	14.38	3–4	
3000.836	B	tr	10.27	14.38	4–3	$a^5F-z^5D°$ †
3018.847	B	2	10.28	14.37	3–2	(10)
3027.46	A	3	10.29	14.37	2–1	
3055.55	A	5	10.33	14.37	1–0	
3007.802	A	6	10.28	14.38	3–3	
3023.85	A	8	10.29	14.37	2–2	
3054.134	A	7	10.33	14.37	1–1	
3018.744	A	6	10.29	14.38	2–3	
3050.463	A	5	10.33	14.37	1–2	
•3419.49	A	3	10.42	14.02	2–3	$c^3F-z^5G°$
3421.97	A	3	10.42	14.02	2–2	(11)
3108.85	A	3	10.39	14.36	4–5	$c^3F-z^5F°$ (12)
3143.36	A	2	10.45	14.38	3–3	$c^3F-z^5D°$ (13)
3283.30	A	2	10.85	14.61	3–4	$b^1F-z^3F°$
3294.50	A	4	10.85	14.60	3–3	(14)
4003.41	A	4	10.95	14.03	4–4	$b^3H-z^5G°$ (15)
3464.27	B	1	10.95	14.51	4–4	$b^3H-z^5D°$ (16)
3367.54	A	3	10.95	14.61	4–4	$b^3H-z^3F°$ (17)
3396.71	A	7	10.98	14.61	6–6	$b^3H-z^3H°$
3347.70	A	8	10.95	14.64	5–5	(18)
3329.89	A	7	10.95	14.65	4–4	
3373.51	A	2	10.98	14.64	6–5	
•3333.27	A	3	10.95	14.65	5–4	
3357.07	B	tr	10.95	14.62	4–3	$b^3H-y^5P°$ (19)
3090.772	B	1	10.95	14.94	4–3	$b^3H-y^5F°$ (20)
3026.985	A	6	10.98	15.05	6–5	$b^3H-z^3G°$
m3006.95	P	Fe III	10.95	15.05	5–4	(21)
3006.122	A	4	10.95	15.05	4–3	
•3004.109	B	3	10.95	15.05	4–4	
4205.92	A	2	11.10	14.03	5–5	$c^3G-z^5G°$
4184.09	A	4	11.08	14.03	4–5	(22)
4196.69	B	1	11.08	14.02	4–3	
•3947.10	A	4	11.08	14.21	4–4	$c^3G-z^5H°$ (23)
3663.98	B	tr	11.08	14.45	4–3	$c^3G-z^5F°$
3664.98	B	1	11.07	14.44	3–3	(24)
3620.27	A	3	11.10	14.51	5–4	$c^3G-z^5D°$ (25)
3514.87	A	2	11.10	14.61	5–4	$c^3G-z^3F°$
3512.34	P		11.08	14.60	4–3	(26)
3511.93	B	tr	11.07	14.59	3–2†	
3499.57	A	7	11.08	14.61	4–4	
•3501.75	A	8	11.07	14.60	3–3	
3489.07	P		11.07	14.61	3–4	
3514.39	P		11.10	14.61	5–6	$c^3G-z^3H°$
3474.41	P		11.08	14.64	4–5	(27)
3448.63	P		11.07	14.65	3–4	
3489.48	P		11.10	14.64	5–5	
3458.91	B	2	11.08	14.65	4–4	
•3473.82 §	B	5	11.10	14.65	5–4	
3167.54	B	1	11.10	15.00	5–5	$c^3G-y^5F°$ (28)
•3120.03 §	A	3	11.10	15.05	5–5	$c^3G-z^3G°$
3108.78	P		11.08	15.05	4–4	(29)
3102.55	P		11.07	15.05	3–3	
3120.84	A	2	11.10	15.05	5–4	
3110.85	A	3	11.08	15.05	4–3	
3107.950	A	8	11.08	15.05	4–5	
3100.48	P		11.07	15.05	3–4	
3070.072	A	5	11.08	15.10	4–3	$c^3G-z^3D°$
3035.802	A	3	11.07	15.14	3–2	(30)
3011.060	B	1	11.07	15.17	3–2	$c^3G-y^5D°$ (31)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe III continued						
4323.81	B	2	11.17	14.02	3–3	$d^3F-z^5G°$ (32)
4057.51	B	4	11.17	14.21	4–4	$d^3F-z^5H°$ (33)
3773.80	B	tr	11.17	14.44	3–2	$d^3F-z^5F°$ (34)
•3697.45§§	B	3	11.17	14.51	3–4	$d^3F-z^5D°$
3845.68	B	1	11.16	14.37	2–2	(35)
3586.12	A	9	11.17	14.61	4–4	$d^3F-z^3F°$
3600.93	A	10	11.17	14.60	3–3	(36)
3603.88	A	9	11.16	14.59	2–2	
3599.49	A	3	11.17	14.60	4–3	
3611.72	A	3	11.17	14.59	3–2	
3587.53	A	3	11.17	14.61	3–4	
3593.15	A	4	11.16	14.60	2–3	
3250.27	B	1	11.17	14.97	3–4	$d^3F-y^5F°$
3294.85	B	1	11.17	14.92	3–2	(37)
3202.19	B	1	11.16	14.90	2–1	
3176.00	A	10	11.17	15.05	4–5	$d^3F-z^3G°$
3178.03	A	10	11.17	15.05	3–4	(38)
3174.09	A	10	11.16	15.05	2–3	
3176.86	B	2	11.17	15.05	4–4	
3180.17	P		11.17	15.05	3–3	
3179.08	B	1	11.17	15.05	4–3	
3136.43	A	10	11.17	15.10	4–3	$d^3F-z^3D°$
3110.052	A	10	11.17	15.14	3–2	(39)
m3083.68	P	Fe I	11.16	15.16	2–1	
3089.649	B	1	11.17	15.16	4–3	$d^3F-y^5D°$
3084.09	A	6	11.17	15.17	3–2	(40)
•3004.109	B	3	11.17	15.28	4–3	$d^3F-x^5P°$
3009.998	B	1	11.17	15.27	3–2	(41)
3004.490	B	1	11.16	15.27	2–2	
4391.26	B	1	11.42	14.23	5–5	$a^1H-z^5H°$ (42)
4927.56	A	2	11.53	14.03	4–5	$e^3F-z^5G°$ (43)
4226.14	B	2	11.53	14.45	2–3	$e^3F-z^5F°$ (44)
m4005.04	P	Fe I	11.53	14.61	4–4	$e^3F-z^3F°$
4022.36	A	4	11.53	14.60	3–3	(45)
4039.12	A	3	11.53	14.59	2–2	
4021.75	P		11.53	14.60	4–3	
4035.82	P		11.53	14.59	3–2	
4005.64	P		11.53	14.61	3–4	
4025.67	P		11.53	14.60	2–3	
3990.81	B	tr	11.53	14.62	3–3	$e^3F-y^5P°$ (46)
3800.43	B	1	11.53	14.78	3–2†	$e^3F-z^3P°$ (47)
3500.29	A	7	11.53	15.05	4–5	$e^3F-z^3G°$
•3501.75	A	8	11.53	15.05	3–4	(48)
3506.93	A	5	11.53	15.05	2–3	
3501.32	P		11.53	15.05	4–4	
3504.40	A	2	11.53	15.05	3–3	
3503.96	P		11.53	15.05	4–3	
m3452.31	P	Fe I	11.53	15.10	4–3	$e^3F-z^3D°$
•3419.49	A	3	11.53	15.14	3–2	(49)
3301.09	B	tr	11.53	15.27	2–2	$e^3F-x^5P°$ (50)
•3118.75 §	A	5	11.53	15.49	4–4	$e^3F-y^3F°$
3100.31	P		11.53	15.51	3–3	(51)
3098.93	P		11.53	15.51	2–2	
4590.68	B	tr	11.54	14.23	4–5	$c^1G-z^5H°$
4663.78	B	1	11.54	14.19	4–3	(52)
4025.07	A	3	11.54	14.61	4–4	$c^1G-z^3F°$ (53)
3515.57	A	5	11.54	15.05	4–5	$c^1G-z^3G°$
3516.58	P		11.54	15.05	4–4	(54)
3519.25	B	1	11.54	15.05	4–3	
3189.74	A	3	11.54	15.41	4–3	$c^1G-y^3D°$ (55)
5532.65	B	1	11.98	14.21	3–4	$c^1F-z^5H°$ (56)
4714.53	B	1	11.98	14.60	3–3	$c^1F-z^3F°$ (57)
4671.25	B	tr	11.98	14.62	3–3	$c^1F-y^5P°$ (58)
3519.85	B	1	11.98	15.49	3–4	$c^1F-y^3F°$ (59)
3535.17	A	3	13.07	16.58	2–2	$d^3D-x^3P°$
3488.92	A	3	13.07	16.61	1–1	(60)
3403.51	A	2	13.07	16.70	2–2	$d^3D-x^3D°$
3406.18	A	2	13.08	16.70	3–2	(61)
•3410.74	A	3	13.07	16.69	2–1	
•3410.74	A	3	13.08	16.70	3–4	$d^3D-y^5G°$ (62)
•3357.40	A	4	13.08	16.75	3–3	$d^3D-w^3D°$
3370.23	A	2n	13.07	16.85	1–1	(63)
•3239.04§§	A	2	13.08	16.89	3–2	
3263.04	A	1	13.07	16.85	1–2	$d^3D-w^3F°$
3238.74	A	2	13.08	16.89	3–3	(64)
3264.22	A	2	13.07	16.85	2–2	
3096.86	A	2	13.07	17.06	2–3	$d^3D-x^3G°$
3099.05	A	2	13.08	17.06	3–3	(65)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe III continued						
4570.34	A	4	13.53	16.23	2-2	c^1D-z^1D^o (66)
3432.97	A	3	13.53	17.12	2-1	c^1D-z^1P^o (67)
5573.3	A	4	14.11	16.33	5-6	d^3G-y^3H^o
5485.6	A	3	14.12	16.37	4-5	(68)
5460.8	A	3	14.12	16.38	3-4	
3976.88	A	4	14.11	17.22	5-5	d^3G-w^3G^o
m3953.76	P	Fe III	14.12	17.24	4-4	(69)
*3947.10	A	4	14.12	17.24	3-3	
3945.08	A	3	14.12	17.24	4-3	
*3828.44	A	2	14.12	17.34	4-3	d^3G-y^1F^o (70)
m3747.40	P	Fe II	14.11	17.41	5-4	d^3G-v^3F^o
3793.52	A	3	14.12	17.37	4-3	(71)
3786.94	A	4	14.12	17.38	3-2	
3382.19	A	6	14.11	17.76	5-5	d^3G-w^3G^o
3360.84	A	6	14.12	17.79	4-4	(72)
3358.74	A	4	14.12	17.79	3-3	
3359.18	A	3	14.11	17.79	5-4	
*3357.40	A	4	14.12	17.79	4-3	
3331.62	A	5	14.11	17.82	5-4	d^3G-t^3F^o
3306.94	A	4	14.12	17.85	4-3	(73)
3315.80	A	3	14.12	17.84	3-2	
*3333.27	A	3	14.12	17.82	4-4	
3362.44	A	6	14.11	17.90	5-4	d^3G-x^1G^o (74)
3256.54	A	2	14.12	17.91	4-3	d^3G-x^1F^o (75)
3022.00	A	3	14.11	18.20	5-5	d^3G-u^3G^o
3045.877	A	3	14.12	18.17	4-4	(76)
3135.80	B	1	14.26	18.19	6-5	z^5H^o-e^7D
3087.659	B	1	14.19	18.19	3-4	(77)
3046.399	B	tr	14.38	18.43	4-3	z^5F^o-e^7S
3094.156	B	1	14.44	18.43	2-3?	(78)
3238.31	B	1	14.37	18.18	2-2	z^5D^o-e^7D (79)
3047.119	B	1	14.38	18.43	3-3	z^5D^o-e^7S (80)
3086.880	B	tr	14.43	18.43	2-3	z^5S^o-e^7S (81)
4569.82	A	4	14.56	17.26	4-4	d^1G-y^1G^o (82)
3753.18	A	3	14.56	17.85	4-5	d^1G-y^1H^o (83)
3700.14	A	2	14.56	17.90	4-4	d^1G-x^1G^o (84)
3690.60	A	4	14.56	17.91	4-3	d^1G-x^1F^o (85)
3454.35	A	2	14.56	18.13	4-3	d^1G-u^3G^o (86)
3218.34	A	6	14.56	18.40	4-4	d^1G-w^1G^o (87)
3446.77	B	tr	14.61	18.19	4-5	z^3F^o-e^7D
3452.55	B	tr	14.61	18.18	4-3	(88)
3003.282	B	1	14.60	18.71	3-3	z^3F^o-e^5D† (89)
3474.94	B	1	14.64	18.19	5-4	z^3H^o-e^7D
3487.11	B	tr	14.65	18.19	4-5	(90)
3043.067	B	2	14.65	18.71	4-4	z^3H^o-e^5D
3043.439	B	1	14.65	18.71	4-3	(91)
3046.714	B	4	14.66	18.71	2-3	y^5P^o-e^5D
3060.162	B	3	14.67	18.71	1-2	(92)
3624.25	B	1	14.78	18.18	2-1	z^3P^o-e^7D
3660.85	B	3	14.81	18.18	1-2	(93)
3688.71	B	tr	14.84	18.18	0-1	
3140.08	B	3	14.78	18.71	2-3	z^3P^o-e^5D
3168.21	B	1	14.81	18.71	1-2	(94)
*3828.44	B	2	14.97	18.19	4-5	y^5F^o-e^7D
3777.43	B	1	14.92	18.18	2-2	(95)
3324.72	A	3	15.00	18.71	5-4	y^5F^o-e^5D
3300.20	A	4	14.97	18.71	4-3	(96)
3274.95	A	3	14.94	18.71	3-2	
*3299.77 §	B	4	14.97	18.71	4-4	
3255.49	A	2	14.92	18.71	2-2	
3274.65	B	1	14.94	18.71	3-4	
3377.77	B	tr	15.05	18.71	4-4	z^3G^o-e^5D (97)
4051.08	B	2	15.14	18.18	2-3	z^3D^o-e^7D
4053.59	B	1	15.14	18.18	2-2	(98)
3711.32	B	3	15.10	18.43	3-3	z^3D^o-e^7S (99)
3458.18	B	tr	15.14	18.71	2-2	z^3D^o-e^5D
3484.18	B	1	15.16	18.71	1-2	(100)
4098.54	B	1	15.17	18.18	2-2	y^5D^o-e^7D (101)
3788.91	B	tr	15.17	18.43	2-3	y^5D^o-e^7S (102)
3496.29	A	4	15.18	18.71	4-4	y^5D^o-e^5D
*3483.36 §	B	4d	15.16	18.71	3-4	(103)
3491.16	B	2	15.17	18.71	2-3	
4237.21	B	2	15.27	18.18	2-2	x^5P^o-e^7D
*4238.78§§	B	5	15.27	18.18	2-1	(104)
4211.51	B	2	15.25	18.18	1-2	
3598.22	B	2	15.28	18.71	3-3	x^5P^o-e^5D
3572.46	B	1	15.25	18.71	1-2	(105)
4462.90	B	3	15.42	18.18	2-3?	y^3D^o-e^7D
4467.36	B	1	15.42	18.18	2-1?	(106)
4100.52	B	3	15.42	18.43	2-3	y^3D^o-e^7S (107)
4621.39	B	3	15.51	18.18	2-3	y^3F^o-e^7D
4616.95	B	1	15.51	18.18	3-2	(108)
4626.53	B	1	15.51	18.18	2-1	
4624.42	B	tr	15.51	18.18	2-2	
3831.75	B	tr	15.49	18.71	4-3	y^3F^o-e^5D
3860.46	B	1	15.51	18.71	3-3	(109)
5436.80	B	1	15.91	18.18	2-3	y^3P^o-e^7D
5286.74	B	tr	15.85	18.18	0-1	(110)
5443.88	B	2	15.91	18.18	2-1	
4908.74	B	1	15.91	18.43	2-3	y^3P^o-e^7S (111)
5269.15	B	4	16.37	18.71	5-4	y^3H^o-e^5D (112)
5243.3	A	10	18.19	20.54	5-4	e^7D-y^7P^o
5282.1	A	7	18.19	20.52	4-3	(113)
5306.6	A	4	18.18	20.51	3-2	
*5235.3 §	A	5	18.19	20.54	4-4	
*5276.2 §	A	7	18.18	20.52	3-3	
5302.5	A	6	18.18	20.51	2-2	
5229.57	B	2	18.18	20.54	3-4	
5272.0	A	3	18.18	20.52	2-3	
5299.9	A	5	18.18	20.51	1-2	
5833.65	C	10	18.43	20.54	3-4	e^7S-y^7P^o
5891.5	C	6	18.43	20.52	3-3	(114)
5929.5	A	5	18.43	20.51	3-2	
5953.65	C	6	18.71	20.78	4-3	e^5D-w^5P^o
5920.0	C	7w	18.71	20.79	-2	(115)
5901.0	A	3	18.71	20.80	-1	
3007.2	A	20wn	18.71	22.81		e^5D-w^5F^o (116)
6032.30	C	7	18.73	20.78	2-3	e^5S-w^5P^o
5999.30	C	5	18.73	20.79	2-2	(117)
5978.90	C	5n	18.73	20.80	2-1	
4164.79	A	20	20.54	23.51	4-5	y^7P^o-f^7D
4137.93	A	10	20.52	23.51	3-4	(118)
4120.97	A	8	20.51	23.50	2-3	
4166.86	A	9	20.54	23.51	4-4	
4139.37	A	8	20.52	23.51	3-3	
4122.06	A	8	20.51	23.50	2-2	
4168.41	A	4	20.54	23.51	4-3	
4140.51	A	6	20.52	23.50	3-2	
4122.98	A	8	20.51	23.50	2-1	
4081.19	A	7	20.54	23.57	4-3	y^7P^o-f^7S
4053.28	A	5	20.52	23.57	3-3	(119)
4035.54	A	4	20.51	23.57	2-3	
*3954.38	A	12	20.78	23.90	3-4	w^5P^o-f^5D
3968.78	A	8	20.79	23.90	2-3	(120)
3978.43	A	4	20.80	23.90	1-2	
*3954.38	A	12	20.78	23.90	3-3	
m3969.43	P	Fe I	20.79	23.90	2-2	
3979.42	A	5	20.80	23.90	1-1	
3980.14	A	3	20.80	23.90	1-0	
4310.37	A	12n	22.77	25.63	6-7	z^7F^o-e^7G
4304.81	A	10n	22.77	25.63	5-6	(121)
4296.86	A	10n	22.76	25.63	4-5	
4286.13	A	10n	22.75	25.63	3-4	
4273.42	A	7n	22.75	25.63	2-3	
4372.4	A	20wn	22.81	25.63		w^5F^o-e^5G (122)

Strongest Unclassified Lines of Fe III (Some possibly Fe II)

6185.1	B	5	5353.78	B	5
5875.6	B	5	5340.92	B	5
5854.1	B	5	5339.92	B	7
5587.9	B	5	5291.78	B	5
5466.46	B	5	5284.85	B	5
5430.14	B	5	5272.86	B	6
5402.27	B	5	5260.25	B	10
5387.35	B	5	5227.53	B	6
5375.68	B	5	5216.99	B	8
5363.80	B	6	5177.73	B	5

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe III continued						
5149.33	B	7	4143.87	B	7	
5100.706	B	10	4121.31	B	6	
*5030.75§	B	6	4113.45	B	7	
5002.02	B	8	4113.23	B	7	
4948.54	B	5	4109.95	B	5	
4596.09	B	5	4008.81	B	5	
4573.14	B	5	3964.11	B	5	
4559.09	B	6	3743.40	B	8	
4535.50	B	5	3652.65	B	6	
4271.47	B	6	3589.77	B	5	
4266.88	B	5	3367.02	B	6	
4255.20	B	5	3338.72	B	7	
4249.95	B	7	3309.40	B	6	
4243.85	B	8	3304.31	B	9	
4235.54	B	10	*3295.24§	B	6	
4222.39	B	8	3190.81	B	8	
4220.32	B	5	3151.86	B	5	
4210.87	B	10	3123.18	B	10	
4200.38	B	6	3121.08	B	10	
4200.06	B	6	3086.311	B	6	
			3044.438	B	5	
4189.10	B	7				
4179.25	B	5				
4174.27	B	10				
4154.98	B	8				
4145.74	B	5				

Co I I P 7.84 Anal A List B Feb 1942

4233.996	E	2	0.00	2.91	$4\frac{1}{2}$-$5\frac{1}{2}$ a^4F-z^6F^o
4339.13	P		0.10	2.94	$3\frac{1}{2}$-$4\frac{1}{2}$ (1)
4361.913	A	(1N)	0.17	3.00	$2\frac{1}{2}$-$3\frac{1}{2}$
4361.031	C	(1n)	0.22	3.05	$1\frac{1}{2}$-$2\frac{1}{2}$
4190.712	A	20	0.00	2.94	$4\frac{1}{2}$-$4\frac{1}{2}$
4252.302	A	12	0.10	3.00	$3\frac{1}{2}$-$3\frac{1}{2}$
4285.782	A	6	0.17	3.05	$2\frac{1}{2}$-$2\frac{1}{2}$
4303.235	A	3	0.22	3.09	$1\frac{1}{2}$-$1\frac{1}{2}$
*4109.706	E	(1d)	0.00	3.00	$4\frac{1}{2}$-$5\frac{1}{2}$
4179.90	P		0.10	3.05	$3\frac{1}{2}$-$2\frac{1}{2}$
4229.955	A	(2n)	0.17	3.09	$2\frac{1}{2}$-$1\frac{1}{2}$
4268.032	C	(1n)	0.22	3.11	$1\frac{1}{2}$- $\frac{1}{2}$
4059.321	G	(1)	0.00	3.04	$4\frac{1}{2}$-$4\frac{1}{2}$ a^4F-z^6D^o
4088.291	A	1	0.10	3.12	$3\frac{1}{2}$-$3\frac{1}{2}$ (2)
4108.488	F	(1)	0.17	3.18	$2\frac{1}{2}$-$2\frac{1}{2}$
3956.270	A	(2)	0.00	3.12	$4\frac{1}{2}$-$3\frac{1}{2}$
4011.089	A	2	0.10	3.18	$3\frac{1}{2}$-$2\frac{1}{2}$
4054.618	A	(2)	0.17	3.22	$2\frac{1}{2}$-$1\frac{1}{2}$
4198.425	C	(2)	0.10	3.04	$3\frac{1}{2}$-$4\frac{1}{2}$
4189.50	H	(1)	0.17	3.12	$2\frac{1}{2}$-$3\frac{1}{2}$
4177.59	H	(1)	0.22	3.18	$1\frac{1}{2}$-$2\frac{1}{2}$
3909.933	A	15	0.00	3.16	$4\frac{1}{2}$-$5\frac{1}{2}$ a^4F-z^6G^o†
3979.518	A	10	0.10	3.20	$3\frac{1}{2}$-$4\frac{1}{2}$ (3)
4027.032	A	10	0.17	3.24	$2\frac{1}{2}$-$3\frac{1}{2}$
4057.195	A	5	0.22	3.27	$1\frac{1}{2}$-$2\frac{1}{2}$
3992.014	G	(1)	0.17	3.26	$2\frac{1}{2}$-$2\frac{1}{2}$
3526.847	A	100R	0.00	3.50	$4\frac{1}{2}$-$4\frac{1}{2}$ a^4F-z^4F^o
3575.361	A	60r	0.10	3.55	$3\frac{1}{2}$-$3\frac{1}{2}$ (4)
3594.870	A	50R	0.17	3.61	$2\frac{1}{2}$-$2\frac{1}{2}$
3602.079	A	40R	0.22	3.65	$1\frac{1}{2}$-$1\frac{1}{2}$
*3474.018	F	100R	0.00	3.55	$4\frac{1}{2}$-$3\frac{1}{2}$
3520.075	A	15	0.10	3.61	$3\frac{1}{2}$-$2\frac{1}{2}$
3550.592	A	20r	0.17	3.65	$2\frac{1}{2}$-$1\frac{1}{2}$
3631.390	A	20r	0.10	3.50	$3\frac{1}{2}$-$4\frac{1}{2}$
3652.541	A	15	0.17	3.55	$2\frac{1}{2}$-$3\frac{1}{2}$
3647.658	A	12	0.22	3.61	$1\frac{1}{2}$-$2\frac{1}{2}$
3465.792	A	100R	0.00	3.56	$4\frac{1}{2}$-$5\frac{1}{2}$ a^4F-z^4G^o†
3513.478	A	50R	0.10	3.61	$3\frac{1}{2}$-$4\frac{1}{2}$ (5)
3529.032	A	30r	0.17	3.67	$2\frac{1}{2}$-$3\frac{1}{2}$
3533.356	A	25r	0.22	3.72	$1\frac{1}{2}$-$2\frac{1}{2}$
3415.519	A	5	0.00	3.61	$4\frac{1}{2}$-$4\frac{1}{2}$
3456.924	A	9	0.10	3.67	$3\frac{1}{2}$-$3\frac{1}{2}$
3483.80	A	(6)	0.17	3.72	$2\frac{1}{2}$-$2\frac{1}{2}$
3412.633	C	80R	0.00	3.62	$4\frac{1}{2}$-$3\frac{1}{2}$ a^4F-z^4D^o
3431.582	A	50r	0.10	3.70	$3\frac{1}{2}$-$2\frac{1}{2}$ (6)
3442.918	A	40r	0.17	3.76	$2\frac{1}{2}$-$1\frac{1}{2}$
3455.237	A	25r	0.22	3.80	$1\frac{1}{2}$- $\frac{1}{2}$
3510.486	A	30r	0.10	3.62	$3\frac{1}{2}$-$3\frac{1}{2}$
3502.63	A	20r	0.17	3.70	$2\frac{1}{2}$-$2\frac{1}{2}$
3491.316	A	15	0.22	3.76	$1\frac{1}{2}$-$1\frac{1}{2}$
3584.801	C	15	0.17	3.62	$2\frac{1}{2}$-$3\frac{1}{2}$
3552.720	A	8	0.22	3.70	$1\frac{1}{2}$-$2\frac{1}{2}$
3153.692	E	(1)	0.00	3.91	$4\frac{1}{2}$-$4\frac{1}{2}$ a^4F-z^2G^o†
3132.218	A	4	0.10	4.04	$3\frac{1}{2}$-$3\frac{1}{2}$ (7)
3237.038	A	8	0.10	3.91	$3\frac{1}{2}$-$4\frac{1}{2}$
3191.297	A	4	0.17	4.04	$2\frac{1}{2}$-$3\frac{1}{2}$
3136.726	A	5	0.00	3.93	$4\frac{1}{2}$-$3\frac{1}{2}$ a^4F-z^2F^o
3219.150	A	5	0.10	3.93	$3\frac{1}{2}$-$3\frac{1}{2}$ (8)
3186.350	A	5	0.17	4.05	$2\frac{1}{2}$-$2\frac{1}{2}$
3281.585	A	2	0.17	3.93	$2\frac{1}{2}$-$3\frac{1}{2}$
3227.752	A	2	0.22	4.05	$1\frac{1}{2}$-$2\frac{1}{2}$
3121.415	C	10	0.00	3.95	$4\frac{1}{2}$-$3\frac{1}{2}$ a^4F-y^4D^o
3139.947	A	12	0.10	4.03	$3\frac{1}{2}$-$3\frac{1}{2}$ (9)
3149.310	A	10	0.17	4.09	$2\frac{1}{2}$-$1\frac{1}{2}$
*3159.662	A	10	0.22	4.13	$1\frac{1}{2}$- $\frac{1}{2}$
3203.026	A	4	0.10	3.95	$3\frac{1}{2}$-$3\frac{1}{2}$
3199.322	A	4	0.17	4.03	$2\frac{1}{2}$-$2\frac{1}{2}$
3189.752	A	5	0.22	4.09	$1\frac{1}{2}$-$1\frac{1}{2}$
m3264.83	P	Co	0.17	3.95	$2\frac{1}{2}$-$3\frac{1}{2}$
3241.05	A	(3)	0.22	4.03	$1\frac{1}{2}$-$2\frac{1}{2}$

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Co I continued						
3082.614	A	12r	0.00	4.00	4½-5½	$a^4F-y^4G^o$
3158.773	A	12	0.10	4.01	3½-4½	(10)
3147.060	A	15r	0.17	4.10	2½-3½	
3137.338	A	10	0.22	4.16	1½-2½	
*3079.394	A	5	0.00	4.01	4½-4½	
3089.596	A	10	0.10	4.10	3½-3½	
3098.194	A	10	0.17	4.16	2½-2½	
3013.592	A	8	0.00	4.10	4½-3½	
3042.481	A	8	0.10	4.16	3½-2½	
3044.004	A	30R	0.00	4.05	4½-4½	$a^4F-y^4F^o$
3061.822	A	20r	0.10	4.13	3½-3½	(11)
3073.341	A	15r	0.17	4.19	2½-2½	
3086.777	A	15r	0.22	4.22	1½-1½	
2987.166	A	15r	0.00	4.13	4½-3½	
3017.548	A	15r	0.10	4.19	3½-2½	
3048.888	A	12r	0.17	4.22	2½-1½	
3121.566	C	10	0.10	4.05	3½-4½	
3118.249	A	5	0.17	4.13	2½-3½	
3110.821	A	5	0.22	4.19	1½-2½	
3082.199	A	5	0.10	4.13	3½-2½	$a^4F-z^2D^o$
3034.432	A	6	0.17	4.24	2½-1½	(12)
3118.638	A	1	0.17	4.13	2½-2½	
3071.957	A	8	0.22	4.24	1½-1½	
3158.293	E	(1)	0.22	4.13	1½-2½	
2989.590	A	15r	0.00	4.13	4½-4½	$a^4F-y^2G^o$ †
3000.545	A	7	0.10	4.21	3½-3½	(13)
3064.370	A	5	0.10	4.13	3½-4½	
3054.734	C	4	0.17	4.21	2½-3½	
4966.581	A	2	0.43	2.91	4½-5½	$b^4F-z^6F^o$
5071.40	P		0.51	2.94	3½-4½	(14)
5091.282	G	(1)	0.58	3.10	2½-3½	
5085.695	G	(1)	0.83	3.05	1½-2½	
4907.125	C	(2)	0.43	2.94	4½-4½	
4953.179	A	2	0.51	3.00	3½-3½	
4987.853	A	2	0.58	3.05	2½-2½	
5007.286	A	(2)	0.63	3.09	1½-1½	
4798.378	A	1	0.43	3.00	4½-3½	
4855.335	A	(1)	0.51	3.05	3½-2½	
4913.399	A	1	0.58	3.09	2½-1½	
4959.682	A	(1)	0.83	3.11	1½- ½	
4727.936	A	3	0.43	3.04	4½-4½	$b^4F-z^6D^o$
4732.051	A	(5)	0.51	3.12	3½-3½	(15)
4588.730	A	1	0.43	3.12	4½-3½	
4628.908	A	(1)	0.51	3.18	3½-2½	
4677.528	F	(1)	0.58	3.22	2½-1½	
4880.25	H	(2)	0.51	3.04	3½-4½	
4857.938	G	(1)	0.58	3.12	2½-3½	
4837.948	G	(2)	0.83	3.18	1½-2½	
4020.898	A	20	0.43	3.50	4½-4½	$b^4F-z^4F^o$
4058.183	A	8	0.51	3.55	3½-3½	(16)
4078.124	A	3	0.58	3.61	2½-2½	
4082.593	A	2	0.83	3.65	1½-1½	
3952.328	C	8	0.43	3.55	4½-3½	
3987.117	A	8	0.51	3.81	3½-2½	
4019.288	A	5	0.58	3.65	2½-1½	
4130.538	E	(1n)	0.51	3.50	3½-4½	
4150.429	A	2	0.58	3.55	2½-3½	
3941.728	A	20	0.43	3.56	4½-5½	$b^4F-z^4G^o$
3978.850	A	10	0.51	3.81	3½-4½	(17)
3991.684	A	8	0.58	3.67	2½-3½	
3994.542	A	6	0.83	3.72	1½-2½	
*3878.831	A	20	0.43	3.61	4½-4½	
3906.287	A	10	0.51	3.87	3½-3½	
3933.918	A	8	0.58	3.72	2½-2½	
3808.102	A	10	0.43	3.87	4½-3½	
3850.945	A	4	0.51	3.72	3½-2½	
3873.120	A	60	0.43	3.82	4½-3½	$b^4F-z^4D^o$
3873.953	A	40	0.51	3.70	3½-2½	(18)
3881.889	A	25	0.58	3.76	2½-1½	
3894.978	A	20	0.83	3.80	1½- ½	
3974.738	A	10	0.51	3.82	3½-3½	
3957.928	A	15	0.58	3.70	2½-2½	
3940.887	A	12	0.83	3.78	1½-1½	
*4063.174	A	(0)	0.58	3.82	2½-3½	
m4019.30	P	Co	0.83	3.70	1½-2½	
3542.978	E	2	0.43	3.91	4½-4½	$b^4F-z^2G^o$
3498.681	C	15	0.51	4.04	3½-3½	(19)
3417.795	C	6	0.43	4.04	4½-3½	
3827.806	A	25r	0.51	3.91	3½-4½	
3564.947	A	25r	0.58	4.04	2½-3½	
3521.567	C	30r	0.43	3.93	4½-3½	$b^4F-z^2F^o$
3490.738	A	10	0.51	4.05	3½-2½	(20)
3605.370	A	20r	0.51	3.93	3½-3½	
3558.772	A	12	0.58	4.05	2½-2½	
3677.980	F	(1)	0.58	3.93	2½-3½	
3608.307	C	3	0.83	4.05	1½-2½	
3503.278	A	100R	0.43	3.95	4½-3½	$b^4F-y^4D^o$
3508.310	A	80R	0.51	4.03	3½-2½	(21)
3513.640	A	60R	0.58	4.09	2½-1½	
3523.423	A	25r	0.83	4.13	1½- ½	
3585.154	A	25R	0.51	3.95	3½-3½	
3574.987	A	25r	0.58	4.03	2½-2½	
3560.891	A	20r	0.83	4.09	1½-1½	
3856.982	A	7	0.58	3.95	2½-3½	
3824.955	A	8	0.83	4.03	1½-2½	
3453.514	A	200R	0.43	4.00	4½-5½	$b^4F-y^4G^o$
3529.816	A	80R	0.51	4.01	3½-4½	(22)
3509.843	A	50r	0.58	4.10	2½-3½	
3495.682	A	50r	0.83	4.16	1½-2½	
3449.441	C	60R	0.43	4.01	4½-4½	
3443.644	A	80R	0.51	4.10	3½-3½	
3449.170	C	60R	0.58	4.18	2½-2½	
3387.111	A	30r	0.43	4.10	4½-3½	
3385.219	A	25r	0.51	4.18	3½-2½	
Co I continued						
3405.120	C	150R	0.43	4.05	4½-4½	$b^4F-y^4F^o$
3409.177	C	60r	0.51	4.13	3½-3½	(23)
3417.154	A	50r	0.58	4.19	2½-2½	
3433.045	A	60R	0.83	4.22	1½-1½	
3334.146	A	30r	0.43	4.13	4½-3½	
3354.374	A	20	0.51	4.19	3½-2½	
*3388.163§	A	30r	0.58	4.22	2½-1½	
3483.410	A	20r	0.51	4.05	3½-4½	
*3474.018	F	100R	0.58	4.13	2½-3½	
3462.804	A	60r	0.63	4.19	1½-2½	
3409.646	C	(2)	0.51	4.13	3½-2½	$b^4F-z^2D^o$ †
3370.322	A	10	0.58	4.24	2½-1½	(24)
3474.530	A	6	0.58	4.13	2½-2½	
*3521.731	C	5	0.63	4.13	1½-2½	
3337.171	A	8	0.43	4.13	4½-4½	$b^4F-y^2G^o$
3333.388	A	10	0.51	4.21	3½-3½	(25)
3412.339	C	80R	0.51	4.13	3½-4½	
3395.370	A	40r	0.58	4.21	2½-3½	
3127.252	A	7	0.43	4.38	4½-3½	$b^4F-y^2F^o$
3105.929	A	3	0.51	4.48	3½-2½	(26)
3193.164	A	5	0.51	4.38	3½-3½	
*3159.662	A	10	0.58	4.48	2½-2½	
3249.995	A	6	0.58	4.38	2½-3½	
3198.660	A	5	0.63	4.48	1½-2½	
4580.139	A	4	0.92	3.81	3½-4½	$a^2F-z^4G^o$
4699.180	A	(0)	1.04	3.67	2½-3½	(27)
4484.513	A	(2)	0.92	3.87	3½-3½	
4619.329	G	(1)	1.04	3.72	2½-2½	
4411.786	E	(1)	0.92	3.72	3½-2½	
4121.318	A	60	0.92	3.91	3½-4½	$a^2F-z^2G^o$
4118.774	A	50	1.04	4.04	2½-3½	(28)
3952.917	C	25	0.92	4.04	3½-3½	
4093.386	A	25	0.92	3.93	3½-3½	$a^2F-z^2F^o$
4110.532	A	25	1.04	4.05	2½-2½	(29)
3945.326	A	15	0.92	4.05	3½-2½	
4270.437	A	(1n)	1.04	3.93	2½-3½	
4066.365	A	15	0.92	3.95	3½-3½	$a^2F-y^4D^o$
4132.155	C	4	1.04	4.03	2½-2½	(30)
3965.236	A	2	0.92	4.03	3½-2½	
3995.306	A	60	0.92	4.01	3½-4½	$a^2F-y^4G^o$
4045.388	A	30	1.04	4.10	2½-3½	(31)
3885.275	A	6	0.92	4.10	3½-3½	
3965.011	E	1	1.04	4.16	2½-2½	
3811.065	A	5	0.92	4.16	3½-2½	
3935.964	A	30	0.92	4.05	3½-4½	$a^2F-y^4F^o$
3997.901	A	40	1.04	4.13	2½-3½	(32)
3841.458	A	5	0.92	4.13	3½-3½	
3923.755	A	7	1.04	4.19	2½-2½	
3884.601	A	10	1.04	4.22	2½-1½	
3843.047	A	30	0.92	4.13	3½-2½	$a^2F-z^2D^o$
3881.164	A	20	1.04	4.24	2½-1½	(33)
3998.554	E	(1n)	1.04	4.13	2½-2½	
3845.468	A	60	0.92	4.13	3½-4½	$a^2F-y^2G^o$
3894.073	A	60	1.04	4.21	2½-3½	(34)
3745.491	A	25	0.92	4.21	3½-3½	
3589.370	A	80R	0.92	4.38	3½-3½	$a^2F-y^2F^o$
3587.186	A	70R	1.04	4.48	2½-2½	(35)
3460.719	C	4	0.92	4.48	3½-2½	
3704.060	A	25	1.04	4.38	2½-3½	
3489.399	A	60r	0.92	4.46	3½-2½	$a^2F-y^2D^o$
3518.340	A	50R	1.04	4.55	2½-1½	(38)
3618.010	A	4	1.04	4.46	2½-2½	
6450.230	A	80	1.70	3.62	2½-3½	$a^4P-z^4D^o$
8282.838	A	40	1.73	3.70	1½-2½	(37)
8230.968	C	10	1.78	3.76	½-1½	
6189.005	A	10	1.70	3.70	2½-2½	
6093.144	A	10	1.73	3.76	1½-1½	
8118.994	A	8	1.78	3.80	½- ½	
6005.030	A	(3)	1.70	3.78	2½-1½	
5984.092	A	3	1.73	3.80	1½- ½	
5530.780	A	10	1.70	3.93	2½-3½	$a^4P-z^2F^o$
*5265.523	F	(1)	1.70	4.05	2½-2½	(38)
5483.354	A	40	1.70	3.95	2½-3½	$a^4P-y^4D^o$
5389.591	A	20	1.73	4.03	1½-2½	(39)
5331.458	A	15	1.78	4.09	½-1½	
5301.042	A	15	1.70	4.03	2½-2½	
5230.310	A	25	1.73	4.09	1½-1½	
5247.931	A	15	1.78	4.13	½- ½	
5185.156	A	3	1.70	4.09	2½-1½	
5149.798	A	4	1.73	4.13	1½- ½	
3738.853	A	5	1.70	5.01	2½-1½	$a^4P-z^4S^o$
3760.401	A	4	1.73	5.01	1½-1½	(40)
3813.470	C	4	1.78	5.01	½-1½	
3548.438	A	7	1.70	5.18	2½-2½	$a^4P-z^4P^o$
3577.260	A	3	1.73	5.18	1½-1½	(41)
3638.030	A	2	1.78	5.18	½- ½	
3546.707	A	8	1.70	5.18	2½-1½	
3578.903	C	8	1.73	5.18	1½- ½	
3579.029	C	8	1.73	5.18	1½-2½	
3834.337	A	5	1.78	5.18	½-1½	
3377.060	A	5	1.70	5.38	2½-3½	$a^4P-w^4D^o$
3422.900	A	4	1.73	5.34	1½-2½	(42)
3463.499	C	3	1.78	5.34	½-1½	
3394.918	C	2	1.70	5.34	2½-2½	
3430.474	A	5	1.73	5.34	1½-1½	
m3442.98	P	Co	1.78	5.36	½- ½	
3400.471	A	1	1.73	5.36	1½- ½	
Co I continued						
3326.564	C	2	1.70	5.41	2½-3½	$a^4P-w^4F^o$
*3314.073	A	8	1.73	5.46	1½-2½	(43)
3287.827	C	(2)	1.70	5.46	2½-2½	
3275.66	A	(1)	1.73	5.50	1½-1½	
3359.284	A	6	1.70	5.38	2½-3½	$a^4P-x^2F^o$
3401.617	C	2	1.73	5.36	1½-2½	(44)
3373.969	A	4	1.70	5.36	2½-2½	
3318.398	A	4	1.70	5.42	2½-2½	$a^4P-x^2D^o$
3346.310	C	1	1.73	5.42	1½-1½	(45)
3319.561	C	(2)	1.70	5.42	2½-1½	
3345.146	E	(1)	1.73	5.42	1½-2½	
3387.47	A	1	1.78	5.42	½-1½	
3286.545	C	1	1.73	5.49	1½- ½	$a^4P-z^2S^o$
*3326.27	A	(1)	1.78	5.49	½- ½	(46)
3258.035	A	4	1.70	5.49	2½-2½	$a^4P-y^4P^o$
3264.719	E	(3)	1.73	5.51	1½-1½	(47)
3282.232	C	1	1.78	5.54	½- ½	
3239.256	E	(1)	1.70	5.51	2½-1½	
3243.579	C	2	1.73	5.54	1½- ½	
3283.777	C	3	1.73	5.49	1½-2½	
3303.881	A	4	1.78	5.51	½-1½	
3103.983	C	5	1.70	5.68	2½-2½	$a^4P-x^4P^o$
3138.999	C	1	1.73	5.67	1½-1½	(48)
3113.473	A	6	1.70	5.67	2½-1½	
3131.829	A	1	1.73	5.67	1½- ½	
3173.140	A	1	1.78	5.67	½-1½	
3107.044	C	3	1.70	5.68	2½-3½	$a^4P-v^4D^o$
3095.716	A	3	1.73	5.72	1½-2½	(49)
3137.755	A	4	1.78	5.71	½-1½	
3102.405	A	4	1.73	5.71	1½-1½	
3114.118	A	(10)N1†	1.78	5.74	½- ½	
*3079.394	A	5	1.70	5.71	2½-1½	
3040.812	A	1	1.70	5.76	2½-2½	$a^4P-v^2D^o$
3109.508	A	4	1.73	5.70	1½-1½	(50)
3088.393	A	4	1.70	5.70	2½-1½	
3083.25	A	(1)	1.73	5.76	1½-2½	
3145.022	A	3	1.78	5.70	½-1½	
3050.932	C	(3)	1.70	5.75	2½-1½	$a^4P-y^4S^o$ †
3073.520	A	3	1.73	5.75	1½-1½	(51)
3039.563	A	3	1.70	5.76	2½-1½	$a^4P-y^2P^o$
*3024.400	A	(1)	1.73	5.81	1½- ½	(52)
3061.983	E	(1)	1.73	5.76	1½-1½	
3096.402	A	3	1.78	5.78	½-1½	
7354.579	A	3	1.87	3.55	2½-3½	$b^4P-z^4F^o$
7437.16	C	1	1.95	3.61	1½-2½	(53)
7478.77	C	(1)	2.00	3.65	½-1½	
7124.47	C	1	1.87	3.61	2½-2½	
7250.12	C	1	1.95	3.65	1½-1½	
7084.974	A	100	1.87	3.82	2½-3½	$b^4P-z^4D^o$
7052.872	A	60	1.95	3.70	1½-2½	(54)
7018.802	A	35	2.00	3.78	½-1½	
8771.040	A	50	1.87	3.70	2½-2½	
6814.950	A	40	1.95	3.76	1½-1½	
6872.32	A	40	2.00	3.80	½- ½	
6551.466	A	3	1.87	3.76	2½-1½	
6678.818	A	5	1.95	3.80	1½- ½	
5935.391	A	8	1.87	3.95	2½-3½	$b^4P-y^4D^o$
5922.365	C	(1n)	1.95	4.03	1½-2½	(55)
5469.305	C	4	1.87	4.13	2½-2½	$b^4P-z^2D^o$
5381.105	C	5	1.95	4.24	1½-1½	(56)
*5651.734	C	(1n)	1.95	4.13	1½-2½	
4781.432	A	3	1.87	4.46	2½-2½	$b^4P-y^2D^o$
4737.769	A	2	1.95	4.55	1½-1½	(57)
4608.908	A	(0)	1.87	4.55	2½-1½	
4920.272	A	1	1.95	4.46	1½-2½	
4834.359	G	—	2.00	4.55	½-1½	
4086.300	A	15	1.87	4.89	2½-3½	$b^4P-x^4D^o$
4068.541	A	8	1.95	4.98	1½-2½	(58)
4058.600	A	6	2.00	5.04	½-1½	
3973.144	A	10	1.87	4.98	2½-2½	
3990.299	A	8	1.95	5.04	1½-1½	
4013.942	A	7	2.00	5.07	½- ½	
3898.485	A	4	1.87	5.04	2½-1½	
3947.135	A	3	1.95	5.07	1½- ½	
3930.078	G	(1)	1.87	5.01	2½-1½	$b^4P-z^4S^o$
4023.399	A	4	1.95	5.01	1½-1½	(59)
4092.848	C	3	2.00	5.01	½-1½	
3858.798	A	4	1.87	5.07	2½-2½	b^4P-2^o
3948.833	A	2	1.95	5.07	1½-2½	(60)
3568.438	C	2	1.87	5.33	2½-2½	$b^4P-x^4G^o$
3845.190	A	5	1.95	5.33	1½-2½	(61)
3732.390	A	20	1.87	5.18	2½-2½	$b^4P-z^4P^o$
3814.457	A	5	1.95	5.18	1½-1½	(62)
3878.750	A	(4)	2.00	5.18	½- ½	
3730.478	A	20	1.87	5.18	2½-1½	
3818.318	A	15	1.95	5.18	1½- ½	
3818.458	A	15	1.95	5.18	1½-2½	
*3878.831	A	20	2.00	5.18	½-1½	
3525.872	C	3	1.87	5.37	2½-1½	$b^4P-z^2P^o$ †
3854.441	A	5	1.95	5.32	1½- ½	(83)
3800.803	A	3	1.95	5.37	1½-1½	
3711.646	A	3	2.00	5.32	½- ½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Co I continued						
3543.256	A	15	1.87	5.36	2½-3½	$b^4P-w^4p^o$
3639.443	A	10	1.95	5.34	1½-2½	(64)
3693.364	C	2	2.00	5.34	½-1½	
3562.912	A	7	1.87	5.34	2½-2½	
3636.713	A	6	1.95	5.34	1½-1½	
3670.041	A	3	2.00	5.36	½- ½	
3560.306	C	5	1.87	5.34	2½-1½	
3614.10	A	(0)	1.95	5.36	1½- ½	
3487.712	A	8	1.87	5.41	2½-3½	$b^4P-w^4F^o$ †
3516.675	C	1	1.95	5.46	1½-2½	(65)
3523.701	C	7	1.87	5.38	2½-3½	$b^4P-x^2F^o$
3615.387	A	6	1.95	5.36	1½-2½	(66)
3478.744	C	7	1.87	5.42	2½-2½	$b^4P-x^2D^o$
3552.989	A	8	1.95	5.42	1½-1½	(67)
3480.012	A	6	1.87	5.42	2½-1½	
3551.666	C	2	1.95	5.42	1½-2½	
3607.04	A	(0)	2.00	5.42	½-1½	
3485.700	A	4	1.95	5.49	1½- ½	$b^4P-z^2S^o$
3537.707	A	1	2.00	5.49	½- ½	(68)
3243.840	A	8	1.87	5.68	2½-2½	$b^4P-x^4P^o$
3317.93	A	(0)	1.95	5.67	1½-1½	(69)
3359.066	A	3	2.00	5.67	½- ½	
3254.202	A	12	1.87	5.67	2½-1½	
3312.148	C	7	1.95	5.67	1½- ½	
3307.156	A	7	1.95	5.68	1½-2½	
3365.014	C	2	2.00	5.67	½-1½	
3247.170	A	8	1.87	5.68	2½-3½	$b^4P-v^4p^o$
3271.778	A	8	1.95	5.72	1½-2½	(70)
3325.240	A	10	2.00	5.71	½-1½	
3209.80	A	(1)	1.87	5.72	2½-2½	
3279.254	A	5	1.95	5.71	1½-1½	
3298.680	A	6	2.00	5.74	½- ½	
3216.996	C	1	1.87	5.71	2½-1½	
3253.416	E	1	1.95	5.74	1½- ½	
3174.905	A	4	1.87	5.76	2½-2½	$b^4P-v^2p^o$
3287.192	A	7	1.95	5.70	1½-1½	(71)
3224.632	A	4	1.87	5.70	2½-1½	
*3335.532	A	6	1.95	5.76	1½-2½	
m3333.41	P	Co	2.00	5.70	½-1½	
3173.56	A	(1)	1.87	5.76	2½-1½	$b^4P-y^2p^o$
3193.220	A	3	1.95	5.81	1½- ½	(72)
3234.119	C	1	1.95	5.76	1½-1½	
3235.783	C	(2)	2.00	5.81	½- ½	
3278.842	A	6	2.00	5.76	½-1½	
3154.794	A	10	1.87	5.79	2½-3½	$b^4P-u^4p^o$
3161.652	A	5	1.95	5.85	1½-2½	(73)
3182.118	A	7	2.00	5.88	½-1½	
3103.735	A	5	1.87	5.85	2½-2½	
m3139.98	P	Co	1.95	5.88	1½-1½	
3152.707	A	6	2.00	5.91	½- ½	
3082.844	C	2	1.87	5.88	2½-1½	
3111.339	C	2	1.95	5.91	1½- ½	
3120.10	A	(3)	1.87	5.83	2½-3½	$b^4P-w^2F^o$
3188.377	A	7	1.95	5.82	1½-2½	(74)
3129.481	A	3	1.87	5.82	2½-3½	
3099.667	A	2	1.95	5.93	1½- ½	$b^4P-x^2S^o$
3140.715	A	2	2.00	5.93	½- ½	(75)
3015.686	A	3	1.87	5.97	2½-1½	$b^4P-x^2P^o$ †
3086.83 †	A	(1?)	1.95	5.93	1½- ½	(76)
3026.373	A	6	1.87	5.95	2½-3½	$b^4P-t^4p^o$
3060.048	A	5	1.95	5.98	1½-2½	(77)
3090.251	A	4	2.00	5.99	½-1½	
3005.766	A	3	1.87	5.98	2½-2½	
3050.496	A	3	1.95	5.99	1½-1½	
3087.806	A	3	2.00	6.00	½- ½	
2996.549	A	1	1.87	5.99	2½-1½	
3048.108	A	2	1.95	6.00	1½- ½	
3017.254	A	3	1.87	5.96	2½-3½	$b^4P-v^2F^o$
m3044.04	P	Co	1.95	6.00	1½-2½	(78)
7809.24	C	(1)	2.03	3.61	4½-4½	$a^2G-z^4G^o$
*7996.80	C	(1)	2.13	3.67	3½-3½	(79)
6563.403	A	40	2.03	3.91	4½-4½	$a^2G-z^2G^o$
m6450.09	P	Co	2.13	4.04	3½-3½	(80)
6146.38	D	(3)	2.03	4.04	4½-3½	
6910.84	C	(2)	2.13	3.91	3½-4½	
6490.344	A	6	2.03	3.93	4½-3½	$a^2G-z^2F^o$
6429.913	A	4	2.13	4.05	3½-2½	(81)
6829.92	D	(1)	2.13	3.93	3½-3½	
5890.487	A	12	2.03	4.13	4½-4½	$a^2G-y^2G^o$
5915.551	A	10	2.13	4.21	3½-3½	(82)
5659.121	A	3	2.03	4.21	4½-3½	
6168.86	D	(1)	2.13	4.13	3½-4½	
5266.506	A	25	2.03	4.38	4½-3½	$a^2G-y^2F^o$
5235.188	A	15	2.13	4.48	3½-2½	(83)
3712.177	A	6	2.03	5.36	4½-3½	$a^2G-w^4p^o$
3843.692	A	4	2.13	5.34	3½-2½	(84)
3651.254	A	4	2.03	5.41	4½-3½	$a^2G-w^4F^o$ †
3707.01	G	—	2.13	5.46	3½-2½	(85)
3690.715	A	7	2.03	5.38	4½-3½	$a^2G-x^2F^o$
3816.876	A	5	2.13	5.36	3½-2½	(86)
3438.713	C	4	2.03	5.62	4½-5½	$a^2G-z^2H^o$
3586.082	E	3	2.13	5.57	3½-4½	(87)
3381.498	C	4	2.03	5.68	4½-4½	$a^2G-x^2G^o$
3503.717	C	3	2.13	5.65	3½-3½	(88)
7987.36	A	5	2.07	3.62	2½-3½	$a^2D-z^4D^o$
7417.38	A	10	2.03	3.70	1½-2½	(89)
7590.57	C	3	2.07	3.70	2½-2½	
7154.688	A	8	2.03	3.76	1½-1½	
7315.73	C	(3)	2.07	3.76	2½-1½	
7004.81	C	3	2.03	3.80	1½- ½	
5991.890	A	20	2.07	4.13	2½-2½	$a^2D-z^2D^o$
5590.744	A	10	2.03	4.24	1½-1½	(90)
5688.593	C	2	2.07	4.24	2½-1½	
5883.431	A	(3)	2.03	4.13	1½-2½	
m5354.01	P	Co	2.07	4.38	2½-3½	$a^2D-y^2F^o$
5034.06	H	(3)	2.03	4.48	1½-2½	(91)
5113.232	C	6	2.07	4.48	2½-2½	
5176.085	A	20	2.07	4.46	2½-2½	$a^2D-y^2D^o$
4899.520	A	2	2.03	4.55	1½-1½	(92)
4974.47	G	(1)	2.07	4.55	2½-1½	
5094.955	A	8	2.03	4.46	1½-2½	
4371.130	A	5	2.07	4.89	2½-3½	$a^2D-x^4p^o$ †
4187.246	A	4	2.03	4.98	1½-2½	(93)
4192.856	A	(2N)	2.07	5.01	2½-1½	$a^2D-z^4S^o$
4139.452	A	3	2.03	5.01	1½-1½	(94)
3735.928	C	12	2.07	5.37	2½-1½	$a^2D-z^2P^o$
3749.930	A	9	2.03	5.32	1½- ½	(95)
3693.476	A	8	2.03	5.37	1½-1½	
3755.447	A	10	2.07	5.36	2½-3½	$a^2D-w^4P^o$
3734.139	A	7	2.03	5.34	1½-2½	(96)
3777.543	A	6	2.07	5.34	2½-2½	
3731.268	A	2	2.03	5.34	1½-1½	
3774.599	A	8	2.07	5.34	2½-1½	
3707.465	A	6	2.03	5.36	1½- ½	
3693.106	A	8	2.07	5.41	2½-3½	$a^2D-w^4F^o$
3605.015	C	5	2.03	5.46	1½-2½	(97)
3645.440	E	3	2.07	5.46	2½-2½	
3559.597	E	1	2.03	5.50	1½-1½	
3733.483	A	12	2.07	5.38	2½-3½	$a^2D-x^2F^o$
3708.823	A	12	2.03	5.36	1½-2½	(98)
3751.625	A	5	2.07	5.36	2½-2½	
3683.047	A	20	2.07	5.42	2½-2½	$a^2D-x^2D^o$
3643.181	A	9	2.03	5.42	1½-1½	(99)
3684.479	C	10	2.07	5.42	2½-1½	
3641.784	A	6	2.03	5.42	1½-2½	
3585.808	C	4	2.07	5.51	2½-1½	$a^2D-y^4p^o$ †
*3521.731	C	5	2.03	5.54	1½- ½	(100)
3458.028	C	3	2.07	5.64	2½-2½	$a^2D-w^2D^o$
m3334.12	P	Co	2.03	5.73	1½-1½	(101)
3368.67	G	(1)	2.07	5.73	2½-1½	
3421.628	A	3	2.03	5.64	1½-2½	
3420.790	A	7	2.07	5.68	2½-2½	$a^2D-x^4p^o$
3396.457	C	1	2.03	5.67	1½-1½	(102)
3432.318	C	3	2.07	5.67	2½-1½	
3390.396	A	5	2.03	5.67	1½- ½	
3424.500	A	10	2.07	5.68	2½-3½	$a^2D-v^4p^o$ †
3348.112	A	8	2.03	5.72	1½-2½	(103)
3355.940	A	2	2.03	5.71	1½-1½	
3356.464	A	6	2.07	5.75	2½-1½	$a^2D-y^4S^o$
*3328.198	A	8	2.03	5.75	1½-1½	(104)
3342.734	C	8	2.07	5.76	2½-1½	$a^2D-y^2P^o$
3364.842	A	5	2.03	5.81	1½- ½	(105)
3308.688	E	(1)	2.03	5.76	1½-1½	
3321.912	C	2	2.07	5.79	2½-3½	$a^2D-u^4p^o$
3332.874	A	(9)	2.03	5.85	1½-2½	(106)
3365.352	A	3	2.07	5.85	2½-2½	
3310.219	A	5	2.03	5.88	1½-1½	
3180.290	A	2	2.03	5.91	1½- ½	
3283.466	A	9	2.07	5.83	2½-3½	$a^2D-w^2F^o$
3260.814	A	9	2.03	5.82	1½-2½	(107)
3293.861	C	2	2.07	5.82	2½-2½	
3168.060	C	6	2.07	5.97	2½-1½	$a^2D-x^2P^o$
3154.678	C	5	2.03	5.95	1½- ½	(108)
3137.454	E	3	2.03	5.97	1½-1½	
3169.766	A	9	2.07	5.96	2½-3½	$a^2D-v^2F^o$
3110.031	C	5	2.03	6.00	1½-2½	(109)
6946.31	C	(2)	2.27	4.05	1½-2½	$a^2P-z^2F^o$ (110)
6632.438	A	15	2.27	4.13	1½-2½	$a^2P-z^2D^o$ †
6417.334	C	15	2.32	4.24	½-1½	(111)
5647.234	A	12	2.27	4.46	1½-2½	$a^2P-y^2P^o$
5523.310	A	8	2.32	4.55	½-1½	(112)
5408.119	C	2	2.27	4.55	1½-1½	
3915.503	A	(2)	2.27	5.42	1½-2½	$a^2P-x^2D^o$
3977.184	A	3	2.32	5.42	½-1½	(113)
3917.115	A	8	2.27	5.42	1½-1½	
3835.497	C	(3)	2.27	5.49	1½- ½	$a^2P-z^2S^o$
3893.067	E	2	2.32	5.49	½- ½	(114)
3662.158	A	12	2.27	5.64	1½-2½	$a^2P-w^2D^o$
3611.701	A	10	2.32	5.73	½-1½	(115)
3563.097	A	6	2.27	5.73	1½-1½	
3620.422	A	5	2.27	5.68	1½-2½	$a^2P-x^4p^o$
3684.960	A	2	2.32	5.67	½-1½	(116)
3633.340	A	2	2.27	5.67	1½-1½	
3677.835	G	(1)	2.32	5.67	½- ½	
3578.076	A	6	2.27	5.72	1½-2½	$a^2P-v^4p^o$
3637.319	A	4	2.32	5.71	½-1½	(117)
3556.120	G	(1)	2.27	5.74	1½- ½	
3534.769	A	4	2.27	5.76	1½-2½	$a^2P-v^2D^o$
3647.081	A	5	2.32	5.70	½-1½	(118)
3596.510	A	5	2.27	5.70	1½-1½	
3431.029	E	(1)	2.27	5.88	1½-1½	$a^2P-u^4D^o$
3387.061	C	1	2.27	5.91	1½- ½	(119)
3478.555	C	8	2.27	5.82	1½-2½	$a^2P-w^2F^o$ (120)
3378.736	A	5	2.27	5.92	1½- ½	$a^2P-y^2S^o$
3423.35	A	(1)	2.32	5.92	½- ½	(121)
3373.226	A	7	2.27	5.93	1½- ½	$a^2P-x^2S^o$
3417.673	C	5	2.32	5.93	½- ½	(122)
3338.519	C	1	2.27	5.97	1½-1½	$a^2P-x^2P^o$
3403.064	C	4	2.32	5.95	½- ½	(123)
*3358.003	A	3	2.27	5.95	1½- ½	
3382.071	E	2	2.32	5.97	½-1½	
3283.213	A	4	2.27	6.05	1½-1½	$a^2P-w^2P^o$ †
3286.986	A	4	2.32	6.14	½- ½	(124)
3073.664	C	(1)	2.27	6.29	1½-1½	$a^2P-v^2P^o$ †
3107.540	A	1	2.32	6.29	½- ½	(125)
7712.661	A	6	2.53	4.13	1½-2½	$b^2P-z^2D^o$
7610.24	C	2	2.62	4.24	½-1½	(126)
7217.34	C	(2)	2.53	4.24	1½-1½	
4268.446	A	2	2.53	5.42	1½-2½	$b^2P-x^2D^o$
4404.932	A	3	2.62	5.42	½-1½	(127)
3969.116	A	8	2.53	5.64	1½-2½	$b^2P-w^2D^o$
3960.997	A	6	2.62	5.73	½-1½	(128)
3851.848	A	2	2.53	5.73	1½-1½	
3870.534	A	4	2.53	5.72	1½-2½	$b^2P-v^4D^o$ †
3991.831	C	(2)	2.62	5.71	½-1½	(129)
3819.908	A	4	2.53	5.76	1½-2½	$b^2P-v^2D^o$
4003.596	A	2	2.62	5.70	½-1½	(130)
3892.118	A	3	2.53	5.70	1½-1½	
3817.940	A	(4)	2.53	5.76	1½-1½	$b^2P-y^2P^o$
3863.607	C	2	2.62	5.81	½- ½	(131)
3759.684	A	3	2.53	5.81	1½- ½	
3925.151	A	3	2.62	5.76	½-1½	
3754.346	A	4	2.53	5.82	1½-2½	$b^2P-w^2P^o$ (132)
3631.948	C	2	2.53	5.93	1½- ½	$b^2P-x^2S^o$
3728.840	A	3	2.62	5.93	½- ½	(133)
3591.746	A	4	2.53	5.97	1½-1½	$b^2P-x^2P^o$
3614.34	A	(1)	2.53	5.95	1½- ½	(134)
3686.477	A	2	2.62	5.97	½-1½	
3504.738	A	5	2.53	6.05	1½-1½	$b^2P-w^2P^o$
3502.998	E	(2d)	2.62	6.14	½- ½	(135)
3417.353	E	(1d)	2.53	6.14	1½- ½	
m3594.87	P	Co	2.62	6.05	½-1½	
3496.070	C	3	2.69	6.22	5½-5½	$a^2H-y^2H^o$
3604.469	A	4	2.77	6.20	4½-4½	(136)
3469.683	E	(2n)	2.69	6.25	5½-4½	$a^2H-w^2G^o$
3553.161	C	2	2.77	6.25	4½-3½	(137)
3174.140	A	2	2.69	6.58	5½-4½	$a^2H-v^2G^o$
*3235.532	A	6	2.77	6.59	4½-3½	(138)
3245.750	A	(1)	2.77	6.58	4½-4½	
7388.689	A	5	2.71	4.38	2½-3½	$b^2D-y^2F^o$
7586.72	C	(4)	2.86	4.48	1½-2½	(139)
6937.81	C	4	2.71	4.48	2½-3½	
7054.042	A	10	2.71	4.46	2½-2½	$b^2D-y^2D^o$ †
7285.28	C	4	2.86	4.55	1½-1½	(140)
4684.561	A	(0)	2.71	5.37	2½-1½	$b^2D-z^2P^o$
5004.187	G	(1)	2.86	5.32	1½- ½	(141)
4904.173	A	1	2.86	5.37	1½-1½	
4543.810	A	6	2.71	5.42	2½-2½	$b^2D-x^2D^o$
4815.900	A	1	2.86	5.42	1½-1½	(142)
4545.985	A	1	2.71	5.42	2½-1½	
m4813.45	P	Co	2.86	5.42	1½-2½	
4375.540	A	2	2.86	5.68	4½-4½	$b^2G-x^2G^o$
4431.608	A	3	2.86	5.65	3½-3½	(143)
4158.420	A	4	2.86	5.83	4½-3½	$b^2G-w^2F^o$
4179.226	A	2	2.86	5.82	3½-2½	(144)
3676.552	A	12	2.86	6.22	4½-5½	$b^2G-y^2H^o$
3703.237	A	12	2.86	6.20	3½-4½	(145)
3699.017	C	2n	2.86	6.20	4½-4½	
3649.329	A	8	2.86	6.24	4½-3½	$b^2G-u^2F^o$
3634.713	A	7	2.86	6.26	3½-2½	(146)
3632.839	A	7	2.86	6.26	4½-5½	$b^2G-x^2H^o$ †
3609.752	A	4	2.86	6.28	3½-4½	(147)
3341.341	A	5	2.86	6.56	4½-3½	$b^2G-s^2F^o$
3339.15	A	(4)	2.86	6.56	3½-2½	(148)
*3322.198	A	8	2.86	6.58	4½-4½	$b^2G-v^2G^o$ †
*3314.073	A	8	2.86	6.59	3½-3½	(149)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Co I continued						
4530.949	A	30	2.91	5.64	5½-5½	$z^6F^o-e^6F$ (150)
4469.547	A	15	2.94	5.71	4½-4½	
4466.881	A	10	3.00	5.77	3½-3½	
4471.550	A	5	3.05	5.81	2½-2½	
4478.319	A	4	3.09	5.85	1½-1½	
4483.918	A	3	3.11	5.87	½- ½	
4421.337	A	4	2.91	5.71	5½-4½	
4374.918	A	3	2.94	5.77	4½-3½	
4391.568	A	4	3.00	5.81	3½-2½	
4417.398	A	5	3.05	5.85	2½-1½	
4445.711	A	4	3.09	5.87	1½- ½	
4581.596	A	20	2.94	5.64	4½-5½	
4565.578	A	15	3.00	5.71	3½-4½	
4549.658	A	10	3.05	5.77	2½-3½	
4533.985	A	7	3.09	5.81	1½-2½	
4517.094	A	4	3.11	5.85	½-1½	
3343.530	E	(1)	2.91	6.61	5½-5½	$z^6F^o-f^4G$ (151)
3399.11	A	(0)	2.94	6.69	4½-4½	
3372.76	A	(1)	2.93	6.89	5½-4½	
3371.015	C	(2)	2.94	8.61	4½-5½	
3351.138	A	1	3.00	6.69	3½-4½	
3356.842	A	3	3.05	6.73	2½-3½	
3318.60	A	(1)	3.09	6.81	1½-2½	
3326.991	C	8	2.91	6.62	5½-5½	$z^6F^o-f^6F$ (152)
3277.662	A	3	2.94	6.71	4½-4½	
3270.198	C	2	3.00	6.78	3½-3½	
3272.405	C	(2)	3.05	6.82	2½-2½	
3251.856	A	(2)	2.91	6.71	5½-4½	
3220.82	A	(4)	2.94	6.78	4½-3½	
3239.36	A	(3)	3.00	6.82	3½-2½	
3354.213	C	4	2.94	6.62	4½-5½	
3329.013	A	2	3.00	6.71	3½-4½	
3314.345	C	2	3.05	8.78	2½-3½	
3305.730	A	2	3.09	6.82	1½-2½	
3294.536	C	2	3.11	6.86	½-1½	
3319.822	A	4	2.91	6.83	5½-4½	$z^6F^o-e^6D$ (153)
3278.105	A	2	2.94	8.71	4½-3½	
m3284.82	P	Co	3.00	6.78	3½-2½	
3259.20	A	(6)	3.05	6.84	2½-1½	
3346.932	A	8	2.94	6.83	4½-4½	
3329.466	A	5	3.00	6.71	3½-3½	
3308.814	A	4	3.05	6.78	2½-2½	
3292.22	A	(1)	3.09	6.84	1½-1½	
3275.238	E	(1)	3.05	6.71	2½-3½	
3313.116	A	2	3.11	6.84	½-1½	
3319.478	C	8	2.91	6.63	5½-6½	$z^6F^o-e^6G$ (154)
3276.483	A	4	2.94	6.71	4½-5½	
3293.210	A	3	3.00	6.75	3½-4½	
3304.119	A	3	3.05	6.79	2½-3½	
3287.575	A	2	3.09	6.85	1½-2½	
•3315.035	C	3	3.11	6.85	½-1½	
3250.51	A	(5w)	2.91	6.71	5½-5½	
3260.288	C	(2)	3.00	6.79	3½-3½	
3254.63	A	(9)	3.05	6.85	2½-2½	
3294.098	C	(2)	3.09	6.85	1½-1½	
3211.01	A	(4)	2.94	8.79	4½-3½	
3339.780	A	8	2.94	6.64	4½-3½	$z^6F^o-e^6P$ (155)
3319.156	C	4	3.00	6.72	3½-2½	
3308.482	A	4	3.05	6.78	2½-1½	
4749.68	A	10	3.04	5.64	4½-5½	$z^6D^o-e^6F$ (156)
4771.108	C	8	3.12	5.71	3½-4½	
4768.072	A	5	3.18	5.77	2½-3½	
4754.358	A	3	3.22	5.81	1½-2½	
4734.828	A	2	3.24	5.85	½-1½	
4639.359	A	15	3.04	5.71	4½-4½	
4663.403	A	12	3.12	5.77	3½-3½	
4682.361	A	9	3.18	5.81	2½-2½	
4693.190	A	6	3.22	5.85	1½-1½	
4698.389	A	3	3.24	5.87	½- ½	
4527.919	A	2	3.04	5.77	4½-3½	
4581.380	F	(1)	3.12	5.81	3½-2½	
4623.020	A	(2N)	3.18	5.85	2½-1½	
4657.390	A	(1)	3.22	5.87	1½- ½	
3361.553	A	5†	3.04	6.71	4½-5½	$z^6D^o-e^6G$† (157)
3398.811	A	3	3.12	6.75	3½-4½	
3401.913	C	(2n)	3.22	6.85	1½-2½	
4867.870	A	25	3.10	5.64	6½-5½	$z^6G^o-e^6F$† (158)
4840.253	A	25	3.16	5.71	5½-4½	
4813.478	A	20	3.20	5.77	4½-3½	
4792.855	A	15	3.24	5.81	3½-2½	
4779.979	A	10	3.27	5.85	2½-1½	
4778.311	A	6	3.28	5.87	1½- ½	
4971.935	A	2	3.18	5.64	5½-5½	
•4938.890	A	2	3.20	5.71	4½-4½	
4883.704	A	2	3.24	5.77	3½-3½	
4843.454	A	3	3.27	5.81	2½-2½	
4813.968	A	2	3.28	5.85	1½-1½	
3564.115	A	4	3.18	6.82	5½-6½	$z^6G^o-f^4H$† (159)
3523.856	E	4	3.20	6.71	4½-5½	
•3491.987	C	3	3.24	8.77	3½-4½	
3468.973	A	3	3.27	6.82	2½-3½	
3505.133	A	3	3.10	6.82	6½-5½	$z^8G^o-f^8F$† (160)
3472.707	C	(1n)	3.18	8.71	5½-4½	
3452.18	A	(2)	3.20	6.78	4½-3½	
3496.794	C	6	3.10	6.63	6½-6½	$z^8G^o-e^6G$† (161)
3471.382	A	7	3.18	6.71	5½-5½	
3477.836	A	4	3.20	8.75	4½-4½	
3478.360	C	5n	3.24	8.79	3½-3½	
3447.281	C	3	3.27	6.85	2½-2½	
3472.198	E	1	3.28	8.85	1½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Co I continued						
3485.368	A	15	3.10	6.64	6½-7½	$z^6G^o-e^6H$† (162)
3461.173	A	15	3.16	6.72	5½-6½	
3446.088	C	12	3.20	6.78	4½-5½	
3437.680	A	6n	3.24	6.83	3½-4½	
3448.358	C	4	3.24	6.82	3½-3½	z^6G^o-3 (163)
6908.08	C	(5)	3.39	5.18	2½-2½	$c^3D-x^2P^o$
7398.72	D	(1)	3.51	5.18	1½-1½	(164)
6901.52	C	(3)	3.39	5.18	2½-1½	
7406.23	D	(1)	3.51	5.18	1½-2½	
6086.663	A	7	3.39	5.42	2½-2½	$c^3D-x^3D^o$†
6474.558	A	(3)	3.51	5.42	1½-1½	(165)
5495.682	A	2	3.39	5.64	2½-3½	$o^3D-w^3D^o$†
5558.825	A	2	3.51	5.73	1½-1½	(166)
5210.042	A	3	3.39	5.76	2½-1½	$c^3D-y^3P^o$
5368.904	A	(2)	3.51	5.81	1½- ½	(167)
4331.231	A	3	3.39	6.24	2½-3½	$o^3D-u^3F^o$
4494.746	A	2	3.51	6.26	1½-2½	(168)
6082.431	A	15	3.50	5.53	4½-4½	$z^4F^o-e^4F$†
6132.640	A	8	3.55	5.57	3½-3½	(169)
•6000.668	A	5	3.81	5.66	2½-2½†	
5946.484	A	5	3.65	5.73	1½-1½	
5985.040	F	(2)	3.50	5.57	4½-3½	
5846.575	A	2	3.55	5.66	3½-2½	
5826.399	A	(2)	3.61	5.73	2½-1½	
5212.699	A	25	3.50	5.87	4½-4½	$z^4F^o-f^4F$†
5148.753	A	15	3.55	5.95	3½-3½	(170)
5126.201	A	10	3.61	6.01	2½-2½	
5122.767	A	8	3.65	8.06	1½-1½	
5332.852	A	5	3.55	5.87	3½-4½	
5265.786	A	4	3.61	5.95	2½-3½	
5219.008	A	2	3.65	6.01	1½-2½	
3972.506	A	8	3.50	6.61	4½-5½	$z^4F^o-f^4G$
3938.856	A	3	3.55	6.69	3½-4½	(171)
3951.717	A	(1n)	3.61	6.73	2½-3½	
3904.790	E	3	3.65	6.81	1½-2½	
5352.048	A	20	3.56	5.87	5½-4½	$z^4G^o-f^4F$†
5280.631	A	20	3.61	5.95	4½-3½	(172)
5266.302	A	10	3.67	6.01	3½-2½	
5268.498	A	10	3.72	6.06	2½-1½	
4035.542	A	8	3.56	6.62	5½-6½	$z^4G^o-f^4H$
3991.528	A	4	3.61	6.71	4½-5½	(173)
3978.864	C	4	3.87	6.77	3½-4½	
m3973.53	P	Co	3.72	6.82	2½-3½	
6454.998	A	40	3.62	5.53	3½-4½	$z^4D^o-e^4F$†
6595.869	A	12	3.70	5.57	2½-3½	(174)
6477.881	A	10	3.76	5.88	1½-2½	
6395.158	A	8	3.80	5.73	½-1½	
5483.962	A	10	3.62	5.87	3½-4½	$z^4D^o-f^4F$†
5477.089	A	5	3.70	5.95	2½-3½	(175)
5470.460	A	4	3.76	6.01	1½-2½	
5452.305	A	3	3.80	6.06	½-1½	
5287.574	C	3	3.82	5.95	3½-3½	
5326.247	C	3	3.70	6.01	2½-2½	
4594.633	A	4	3.62	6.30	3½-3½	$z^4D^o-e^4D$†
4625.767	A	2	3.70	8.37	2½-2½	(176)
4598.903	A	5	3.82	8.30	3½-2½	$z^4D^o-e^4P$†
4528.794	A	2	3.70	8.42	2½-1½	(177)
4570.034	A	2	3.62	6.32	3½-4½	$z^4D^o-g^4F$†
4704.386	A	(2)	3.70	6.32	2½-3½	(178)
7027.797	A	8	3.91	5.67	4½-3½	$z^2G^o-e^2F$†
7134.290	A	5	4.04	5.77	3½-2½	(179)
5133.467	A	15	3.91	6.32	4½-5½	$z^2G^o-e^4H$
5156.368	A	10	4.04	6.43	3½-4½	(180)
4756.732	A	(1)	3.91	6.51	4½-3½	
5135.715	A	7	3.91	8.32	4½-5½	$z^2G^o-e^4G$†
5108.903	A	10	3.91	6.33	4½-4½	(181)
4746.115	A	(1)	3.91	8.51	4½-3½	$z^2G^o-g^2F$
4787.142	A	(2)	4.04	6.63	3½-2½	(182)
7743.27	C	(5)	3.93	5.53	3½-4½	$z^2F^o-e^4F$
8112.13	D	(1)	4.05	5.57	2½-3½	(183)
7553.970	A	4	3.93	5.57	3½-3½	
7834.50	C	(5)	4.05	5.68	2½-2½	
5211.832	A	3	3.93	6.30	3½-3½	$z^2F^o-e^4D$
5077.410	A	3	3.93	6.36	3½-2½	(184)
4795.853	A	2	3.93	8.51	3½-3½	$z^2F^o-e^4H$ (185)
4785.070	A	(1)	3.93	6.51	3½-3½	$z^2F^o-g^2F$
4778.333	A	2	4.05	6.63	2½-2½	(188)
5254.852	A	8	3.95	8.30	3½-3½	$y^4D^o-e^4D$†
5287.785	A	5	4.03	8.37	2½-2½	(187)
5230.363	G	(1)	4.09	6.45	1½-1½	
5210.834	A	3	4.13	6.50	½- ½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Co I continued						
5257.621	A	10	3.95	6.30	3½-2½	$y^4D^o-e^4P$† (188)
5158.854	A	2	4.03	6.42	2½-1½	
8093.932	A	8	4.00	5.53	5½-4½	$y^4G^o-e^4F$† (189)
7908.679	A	6	4.01	5.57	4½-3½	
7869.868	A	2	4.10	5.66	3½-2½	
7871.370	A	2	4.16	5.73	2½-1½	
5342.703	A	50	4.00	6.31	5½-6½	$y^4G^o-e^4H$† (190)
5343.383	A	20	4.01	6.32	4½-5½	
5276.183	A	8	4.10	6.43	3½-4½	
5250.003	A	7	4.16	6.51	2½-3½	
5333.647	A	5	4.00	6.32	5½-5½	
5334.821	A	6	4.00	6.32	5½-4½	$y^4G^o-g^4F$† (191)
5336.163	A	3	4.01	6.32	4½-3½	
5344.570	A	(1n)	4.01	6.32	4½-4½	
5545.937	A	2	4.10	6.32	3½-3½	
5325.276	A	10	4.00	6.32	5½-5½	$y^4G^o-e^4G$† (192)
5316.772	A	7	4.01	6.33	4½-4½	
5324.990	A	4	4.10	6.33	3½-4½	
5407.520	A	5	4.16	6.44	2½-3½	
8372.79	A	(10)	4.05	5.53	4½-4½	$y^4F^o-e^4F$† (193)
•8589.78	A	(3)	4.13	5.57	3½-3½	
8379.44	A	(3)	4.19	5.66	2½-2½	
8208.57	A	(8)	4.22	5.73	1½-1½	
8151.95	A	(6)	4.05	5.57	4½-3½	
8055.996	A	2	4.13	5.66	3½-2½	
8043.306	A	2	4.19	5.73	2½-1½	
5453.338	A	(1)	4.05	6.32	4½-5½	$y^4F^o-e^4H$ (194)
5359.200	A	6	4.13	6.43	3½-4½	
5325.949	A	4	4.19	6.51	2½-3½	
5454.573	A	20	4.05	6.32	4½-4½	$y^4F^o-g^4F$† (195)
5637.734	A	3	4.13	6.32	3½-3½	
5515.990	A	(1)	4.19	6.43	2½-2½	
5402.000	A	3	4.22	6.51	1½-1½	
5444.585	A	20	4.05	6.32	4½-5½	$y^4F^o-e^4G$† (196)
5381.776	A	6	4.22	6.51	1½-2½	
5425.621	A	(2)	4.05	6.33	4½-4½	
5347.499	A	4	4.13	6.44	3½-3½	
5310.219	A	(1n)	4.19	6.51	2½-2½	
5312.650	A	8	4.19	6.51	2½-3½	$y^4F^o-g^2F$† (197)
5124.718	A	2	4.22	6.63	1½-2½	
5353.500	A	25	4.13	6.43	4½-5½	$y^2G^o-e^2H$ (198)
5362.781	A	15	4.21	6.52	3½-4½	
5341.328	A	7	4.13	6.44	4½-4½	$y^2G^o-e^2G$† (199)
5339.528	C	4	4.21	6.53	3½-3½	
6347.843	A	10	4.38	6.32	3½-3½	$y^2F^o-g^4F$† (200)
6351.448	A	2	4.48	6.43	2½-2½	
5984.253	A	3	4.38	6.44	3½-4½	$y^2F^o-e^2G$ (201)
6049.110	A	6	4.48	6.53	2½-3½	
6617.126	A	6n	4.46	6.32	2½-1½	$y^2D^o-e^2P$ (202)
6591.834	E	(1)	4.55	6.42	1½- ½	
8819.11	A	100	5.13	6.53	5½-4½	$x^4G^o-h^4F$† (203)
8750.13	B	60	5.22	6.63	4½-3½	

Strongest Unclassified Lines of Co I

3443.203	C	5	III†
3177.266	A	8	III

Co II I P 17.1 Anal C List A Mar 1942

3621.22	A	100	2.19	5.60	3-4	$4s^5P-4p^5F^o$ (1)
3578.03	A	30	2.23	5.68	2-3	
3555.93	A	10	2.28	5.73	1-2	
3545.03	A	25	2.19	5.68	3-3	
3517.48	A	10	2.23	5.73	2-2	
3514.21	A	5	2.26	5.78	1-1	
3501.73	A	200	2.19	5.72	3-4	$4s^5P-4p^5D^o$ (2)
3446.40	A	100	2.23	5.81	2-3	
3423.85	A	75	2.26	5.87	1-2	
3415.78	A	75	2.19	5.81	3-3	
•3388.18 §	A	50	2.23	5.87	2-2	
3387.73	A	60	2.26	5.91	1-1	
3358.59	A	10	2.19	5.87	3-2	
3352.80	A	30	2.23	5.91	2-1	
3370.94	A	50	2.26	5.92	1-0	

Measures inadequate for preparation of list of stronger unclassified lines of Co II.

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ni I I P 7.61 Anal A List B March 1942						
3946.18	P		0.16	3.29	3-3	$a^3F-z^5D^o$
3749.045	B	8	0.00	3.29	4-3	(1)
3832.873	B	5	0.16	3.38	3-2	
3885.87	P		0.27	3.45	2-1	
4093.62	P		0.16	3.18	3-4	
3624.733	B	15	0.00	3.40	4-5	$a^3F-z^5G^o$
3739.289	B	10	0.16	3.47	3-4	(2)
3792.337	B	5	0.27	3.53	2-3	
3561.751	B	10	0.00	3.47	4-4	
3669.241	B	12	0.16	3.53	3-3	
3730.751	B	4	0.27	3.58	2-2	
3498.19	P		0.00	3.53	4-3	
3611.54	P		0.16	3.58	3-2	
3502.595	B	8	0.00	3.52	4-5	$a^3F-z^5F^o$
3602.281	B	15	0.16	3.59	3-4	(3)
3437.280	B	30R	0.00	3.59	4-4	
3507.694	B	8	0.16	3.68	3-3	
3577.240	B	2	0.27	3.72	2-2	
3351.06	P		0.00	3.68	4-3	
3467.502	B	12	0.16	3.72	3-2	
*3548.185	B	20r	0.27	3.75	2-1	
3670.427	B	20	0.16	3.53	3-2	$a^3F-z^3P^o$
3664.095	B	20	0.27	3.64	2-1	(4)
3793.608	B	8	0.27	3.53	2-2	
3391.050	B	5 R	0.00	3.64	4-4	$a^3F-z^3F^o$
3571.869	B	5oR	0.16	3.62	3-3	(5)
3519.766	B	20R	0.27	3.78	2-2	
3409.578	B	8	0.00	3.62	4-3	
3413.478	B	25R	0.16	3.78	3-2	
3551.534	B	8	0.16	3.64	3-4	
3688.415	B	15	0.27	3.62	2-3	
3369.573	B	80R	0.00	3.66	4-3	$a^3F-z^3D^o$
3500.852	B	25R	0.16	3.69	3-2	(6)
3483.774	B	25R	0.27	3.82	2-1	
3537.982	B	15	0.16	3.66	3-3	
3612.741	B	30R	0.27	3.69	2-2	
3641.641	B	4	0.27	3.66	2-3	
3232.963	B	25R	0.00	3.82	4-5	$a^3F-z^3G^o$
3371.993	B	15r	0.16	3.82	3-4	(7)
3380.885	B	15r	0.27	3.92	2-3	
3226.984	B	5	0.00	3.82	4-4	
3282.696	B	8	0.16	3.92	3-3	
3145.121	B	3	0.00	3.92	4-3	
3221.652	B	10r	0.00	3.83	4-3	$a^3F-z^1F^o$
3366.168	B	20R	0.16	3.83	3-3	(8)
3469.486	B	15	0.27	3.83	2-3	
3320.257	B	20R	0.16	3.88	3-2	$a^3F-z^1D^o$
3420.741	B	5	0.27	3.88	2-2	(9)
3249.440	B	6	0.27	4.07	2-1	$a^3F-z^1P^o$ (10)
3031.870	B	10r	0.00	4.07	4-4	$a^3F-y^5F^o$
3145.719	B	8	0.16	4.09	3-3	(11)
3184.367	B	8	0.27	4.15	2-2	
3019.143	B	20R	0.00	4.09	4-3	
3097.118	B	15r	0.16	4.15	3-2	
3159.521	B	3	0.16	4.07	3-4	
3235.753	B	4	0.27	4.09	2-3	
2984.131	B	12R	0.00	4.14	4-3	$a^3F-y^3D^o$
3045.006	B	10r	0.16	4.22	3-2	(12)
3105.469	B	15r	0.27	4.25	2-1	
3107.714	B	4	0.16	4.14	3-3	
3129.314	B	7	0.27	4.22	2-2	
3195.573	B	6	0.27	4.14	2-3	
3099.115	B	12r	0.16	4.15	3-4	$a^3F-z^1G^o$ (13)
*2991.095	B	4	0.27	4.40	2-3	$a^3F-y^1F^o$ † (14)
3912.979	B	5	0.03	3.18	3-4	$a^3D-z^5D^o$
3889.671	B	15	0.21	3.38	1-2	(15)
3778.063	B	5	0.03	3.29	3-3	
3811.32	F	(2)	0.21	3.45	1-1	
*3674.06	P	10	0.03	3.38	3-2	
3693.932	B	8	0.11	3.45	2-1	
3772.530	B	6	0.21	3.48	1-0	
3587.931	B	12	0.03	3.47	3-4	$a^3D-z^5G^o$
3609.314	B	15	0.11	3.53	2-3	(16)
3661.951	B	8	0.21	3.58	1-2	
3523.444	B	10	0.03	3.53	3-3	
3553.483	B	7	0.11	3.58	2-2	
3461.652	B	125R	0.03	3.59	3-4	$a^3D-z^5F^o$
3452.890	B	40R	0.11	3.66	2-3	(17)
*3513.933	B	15	0.21	3.72	1-2	
3374.221	B	15r	0.03	3.68	3-3	
3413.939	B	12r	0.11	3.72	2-2	
3485.888	B	10	0.21	3.75	1-1	
3337.014	B	4	0.03	3.72	3-2	
3387.466	B	3	0.11	3.75	2-1	
3524.541	B	200R	0.03	3.53	3-2	$a^3D-z^3P^o$
3493.956	B	150R	0.11	3.64	2-1	(18)
3510.338	B	80R	0.21	3.73	1-0	
3610.462	B	60R	0.11	3.53	2-2	
3597.705	B	50R	0.21	3.64	1-1	
3722.484	B	15	0.21	3.53	1-2	
3414.765//	B	150R	0.03	3.64	3-4	$a^3D-z^3F^o$
3515.054	B	150R	0.11	3.62	2-3	(19)
3458.474	B	125R	0.21	3.78	1-2	
3433.558	B	70R	0.03	3.62	3-3	
3381.556	B	30R	0.11	3.78	2-2	
3288.946	B	8	0.03	3.78	3-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ni I continued						
3392.992	B	100R	0.03	3.66	3-3	$a^3D-z^3D^o$
3446.263	B	100R	0.11	3.69	2-2	(20)
3423.711	B	50R	0.21	3.82	1-1	
3367.892	B	8	0.03	3.69	3-2	
3328.714	B	5	0.11	3.82	2-1	
3472.545	B	70R	0.11	3.66	2-3	
*3548.185	B	20r	0.21	3.69	1-2	
3248.457	B	8	0.03	3.82	3-4	$a^3D-z^3G^o$
3234.649	B	10r	0.11	3.92	2-3	(21)
3165.508	B	3	0.03	3.92	3-3	
3243.058	B	25R	0.03	3.83	3-3	$a^3D-z^1F^o$
3315.663	B	30R	0.11	3.83	2-3	(22)
3200.423	B	5	0.03	3.88	3-2	$a^3D-z^1D^o$
3271.118	B	10	0.11	3.88	2-2	(23)
3362.806	B	6	0.21	3.88	1-2	
3114.124	B	20R	0.11	4.07	2-1	$a^3D-z^1P^o$
3197.113	B	10r	0.21	4.07	1-1	(24)
3050.819	B	100R	0.03	4.07	3-4	$a^3D-y^3F^o$
3101.554	B	100R	0.11	4.09	2-3	(25)
3134.108	B	60R	0.21	4.15	1-2	
3037.935	B	60R	0.03	4.09	3-3	
3054.316	B	50R	0.11	4.15	2-2	
2992.595	B	20R	0.03	4.15	3-2	
3002.491	B	100R	0.03	4.14	3-3	$a^3D-y^3D^o$ †
3003.629	B	60R	0.11	4.22	2-2	(26)
3057.638	B	50R	0.21	4.25	1-1	
2981.651	B	20R	0.11	4.25	2-1	
3064.623	B	25R	0.11	4.14	2-3	
3080.755	B	20R	0.21	4.22	1-2	
2994.460	B	25R	0.03	4.15	3-4	$a^3D-z^1G^o$ (27)
4298.767	B	(3)	0.42	3.29	2-3	$a^1D-z^5D^o$
4164.636	D	1	0.42	3.38	2-2	(28)
4074.897	B	2	0.42	3.45	2-1	
3973.171	B	10	0.42	3.53	2-3	$a^1D-z^5G^o$
3904.64	P		0.42	3.58	2-2	(29)
3783.530	B	30r	0.42	3.68	2-3	$a^1D-z^5F^o$
3736.813	B	15	0.42	3.72	2-2	(30)
3705.12	P		0.42	3.75	2-1	
3973.563	B	25	0.42	3.53	2-2	$a^1D-z^3P^o$
3831.690	B	20	0.42	3.64	2-1	(31)
3858.301	B	40r	0.42	3.62	2-3	$a^1D-z^3F^o$
*3674.15	P	15	0.42	3.78	2-2	(32)
3807.144	B	35r	0.42	3.66	2-3	$a^1D-z^3D^o$
3775.572	B	30r	0.42	3.69	2-2	(33)
3634.941	B	12	0.42	3.82	2-1	
3523.074	B	4	0.42	3.92	2-3	$a^1D-z^3G^o$ (34)
3619.392	B	150R	0.42	3.83	2-3	$a^1D-z^1F^o$ (35)
3566.372	B	100R	0.42	3.88	2-2	$a^1D-z^1D^o$ (36)
3380.574	B	80R	0.42	4.07	2-1	$a^1D-z^1P^o$ (37)
3365.766	B	15r	0.42	4.09	2-3	$a^1D-y^3F^o$
3310.202	B	5	0.42	4.15	2-2	(38)
3322.310	B	15r	0.42	4.14	2-3	$a^1D-y^3D^o$
3250.743	B	9	0.42	4.22	2-2	(39)
3225.020	B	10r	0.42	4.25	2-1	
3101.879	B	40R	0.42	4.40	2-3	$a^1D-y^1F^o$ (40)
3012.004	B	75R	0.42	4.52	2-2	$a^1D-y^1D^o$ (41)
6128.990	B	(3)	1.67	3.68	2-3	$b^1D-z^5F^o$
6007.313	D	3	1.67	3.72	2-2	(42)
5935.81	P		1.67	3.75	2-1	
6643.641	C	20	1.67	3.53	2-2	$b^1D-z^3P^o$
6256.365	C	15	1.67	3.64	2-1	(43)
6327.603	B	5	1.67	3.62	2-3	$b^1D-z^3F^o$
5847.010	B	(3)	1.67	3.78	2-2	(44)
6191.186	B	12	1.67	3.66	2-3	$b^1D-z^3D^o$
6108.121	C	8	1.67	3.69	2-2	(45)
5748.343	B	2	1.67	3.82	2-1	
5709.559	B	12	1.67	3.83	2-3	$b^1D-z^1F^o$ (46)
5578.734	B	5	1.67	3.88	2-2	$b^1D-z^1D^o$ (47)
5137.075	B	8	1.67	4.07	2-1	$b^1D-z^1P^o$ (48)
5102.971	B	(4)	1.67	4.09	2-3	$b^1D-y^3F^o$
4976.345	B	(2)	1.67	4.15	2-2	(49)
5003.751	B	(2)	1.67	4.14	2-3	$b^1D-y^3D^o$
4843.165	B	(2)	1.67	4.22	2-2	(50)
4786.293	B	(2)	1.67	4.25	2-1	
4519.986	B	4	1.67	4.40	2-3	$b^1D-y^1F^o$ (51)
4331.645	B	12	1.67	4.52	2-2	$b^1D-y^1P^o$ (52)
3435.489	B	2	1.67	5.26	2-3	$b^1D-x^3D^o$ (53)
3338.758	B	3	1.67	5.37	2-1	$b^1D-y^1P^o$ (54)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ni I continued						
3287.221	B	2	1.67	5.42	2-2	$b^1D-x^1D^o$ (55)
*3029.297	B	3	1.67	5.74	2-2	$b^1D-x^3P^o$ (56)
6767.778	C	20	1.82	3.64	0-1	$a^1S-z^3P^o$ (57)
6177.258	B	(3)	1.82	3.82	0-1	$a^1S-z^3D^o$ (58)
5476.906	B	50	1.82	4.07	0-1	$a^1S-z^1P^o$ (59)
5079.961	B	(3)	1.82	4.25	0-1	$a^1S-y^3D^o$ (60)
7028.95	P		1.93	3.68	2-3	$a^3P-z^5F^o$
6928.52	P		1.94	3.72	1-2	(61)
7714.27	G	3	1.93	3.53	2-2	$a^3P-z^3P^o$
7261.94	G	3	1.94	3.64	1-1	(62)
7197.07	G	5	1.93	3.64	2-1	
6914.562	D	50	1.94	3.73	1-0	
7788.95	G	2	1.94	3.53	1-2	
7414.51	G	2	1.98	3.64	0-1	
7291.48	B	(8)	1.93	3.62	2-3	$a^3P-z^3F^o$ (63)
7110.91	B	(6)	1.93	3.66	2-3	$a^3P-z^3D^o$
7062.97	B	(4)	1.94	3.69	1-2	(64)
7001.57	B	(4)	1.93	3.69	2-2	
6586.328	B	6	1.94	3.82	1-1	
6532.891	B	(3)	1.93	3.82	2-1	
*6180.093	B	(1n)	1.93	3.92	2-3	$a^3P-z^3G^o$ (65)
6482.811	B	5	1.93	3.83	2-3	$a^3P-z^1F^o$ (66)
6314.666	C	15	1.93	3.88	2-2	$a^3P-z^1D^o$
6364.597	D	(1)	1.94	3.88	1-2	(67)
5754.675	B	10	1.93	4.07	2-1	$a^3P-z^1P^o$
5796.078	B	(2)Fe†	1.94	4.07	1-1	(68)
5893.878	C	12	1.98	4.07	0-1	
5711.905	B	5	1.93	4.09	2-3	$a^3P-y^3F^o$
5592.283	B	8	1.94	4.15	1-2	(69)
5553.693	B	2	1.93	4.15	2-2	
5587.865	B	5	1.93	4.14	2-3	$a^3P-y^3D^o$
5424.654	B	4	1.94	4.22	1-2	(70)
5435.871	B	5	1.98	4.25	0-1	
5388.350	B	(2)	1.93	4.22	2-2	
5353.415	B	3	1.94	4.25	1-1	
4763.627	B	3	1.93	4.52	2-2	$a^3P-y^1D^o$
4791.00	E	(1)	1.94	4.52	1-2	(71)
4019.055	D	(3)	1.93	5.00	2-2	a^3P-z^o (72)
3564.67	P		1.93	5.39	2-3	$a^3P-x^3P^o$ (73)
3696.65	P		1.93	5.27	2-2	$a^3P-y^3P^o$
3713.336	D	(2)	1.94	5.27	1-1	(74)
3696.29	P		1.93	5.27	2-1	
3713.696	D	1	1.94	5.27	1-2	
3643.387	B	2	1.98	5.37	0-1	$a^3P-y^1P^o$ (75)
3589.635	D	(1)	1.93	5.42	2-2	$a^3P-x^1D^o$
3545.16	E	(1)	1.94	5.42	1-2	(76)
3176.292	B	2	1.94	5.83	1-1?	$a^3P-x^3P^o$ (77)
3181.740	B	5	1.93	5.81	2-3	$a^3P-y^3D^o$
3183.351	B	4	1.94	5.83	1-2	(78)
3183.038	B	3	1.98	5.85	0-1	
3170.715	B	2	1.93	5.82	2-2	
3154.585	B	2	1.94	5.85	1-1	
3164.166	B	2	1.94	5.84	1-2	a^3P-4^o (79)
*2991.095	B	4	1.93	6.05	2-3	a^3P-6^o (80)
11196.70	P		2.73	3.83	4-3	$a^1G-z^1F^o$ (81)
8770.68	A	10	2.73	4.14	4-3	$a^1G-y^3D^o$ (82)
8702.49	A	6	2.73	4.15	4-4	$a^1G-z^1G^o$ (83)
7385.24	B	1	2.73	4.40	4-3	$a^1G-y^1F^o$ (84)
4837.65	P		2.73	5.28	4-3	$a^1G-w^3D^o$ (85)
4401.547	B	30	3.18	5.98	4-5	$z^5D^o-e^5F$
4459.037	B	20	3.29	6.06	3-4	(86)
4470.483	B	15	3.38	6.15	2-3	
4462.460	B	10	3.45	6.22	1-2	
4436.981	B	5	3.48	6.26	0-1	
4384.683	B	6	3.18	6.06	4-4	
4325.607	B	6	3.29	6.15	3-3	
4359.585	B	10	3.38	6.22	2-3	
4384.543	B	5	3.45	6.26	1-1	
4161.34	P		3.18	6.15	4-3	
4231.696	B	(2)	3.29	6.22	3-2	
4285.19	P		3.38	6.26	2-1	
4389.870	B	3	3.45	6.26	1-1	$z^5D^o-f^3D$
4574.03	E	(1)	3.38	6.08	2-3	(87)
4442.441	B	(4)	3.48	6.26	0-1	
4414.30	P		3.29	6.09	3-3	$z^5D^o-e^3F$
4410.516	B	4	3.29	6.09	3-4	(88)
4565.13	P		3.38	6.09	2-3	
4367.38	P	(1)	3.45	6.28	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
continued						
.347	B	(2)	3.29	6.33	3-3	z^5D^o-f^3F (89)
.464	B	5	3.29	6.33	3-4	
.475	B	(4)	3.38	6.33	2-3	
.75	P		3.45	6.42	1-2	
.392	B	4	3.29	7.00	3-2	z^5D^o-f^3P (90)
.674	D	(1)	3.38	7.13	2-1	
.23	E	(1)	3.45	7.22	1-0	
.47	P		3.28	7.00	2-2	
.830	B	8	3.18	7.01	4-3	z^5D^o-e^5P (91)
.174	B	4	3.29	7.11	3-2	
.423	B	5n	3.38	7.22	2-1	
.971	B	2n	3.45	7.22	1-1	
.02	P		3.48	7.22	0-1	
.534	B	3	3.18	7.01	4-4	z^5D^o-i^3F (92)
.75	P		3.29	7.16	3-3	
.242	B	2	3.29	7.01	3-4	
.059	B	7	3.18	7.02	4-4	z^5D^o-e^5D † (93)
.821	B	5	3.29	7.13	3-3	
.142	B	5	3.18	7.03	4-5	z^5D^o-f^5F (94)
.912	B	5	3.29	7.14	3-4	
.952	B	4n	3.38	7.23	2-3	
.811	B	3	3.45	7.28	1-2	
.534	B	3	3.48	7.31	0-1	
.56	P		3.18	7.14	4-4	
.714	B	2	3.18	7.14	4-5	z^5D^o-e^5G (95)
.432	D	4	3.29	7.05	3-3	z^5D^o-i^3D (96)
.29	P		3.38	7.05	2-3	
.71	B	2	3.47	5.26	4-3	z^5G^o-e^3D (97)
.42	B	1	3.53	5.28	3-2	
.24	G	(1)	3.58	5.45	2-1	
.71	B	(2)	3.53	5.26	3-3	
.72	G	(1)	3.58	5.28	2-2	
.421	B	25	3.37	5.98	6-5	z^5G^o-e^5F (98)
.659	B	15	3.40	6.06	5-4	
.994	B	12	3.47	6.15	4-3	
.529	B	10	3.53	6.22	3-2	
.372	B	6	3.58	6.26	2-1	
.541	B	15	3.40	5.98	5-5	
.519	B	10	3.47	6.06	4-4	
.778	B	8	3.53	6.15	3-3	
.318	B	5	3.58	6.22	2-2	
.97	E	(1)	3.47	5.98	4-5	
.809	B	(2)	3.53	6.06	3-4	
.617	B	(2)	3.58	6.15	2-3	
.45	P		3.37	6.07	6-5	z^5G^o-e^3G (99)
.50	E	(1)	3.47	6.07	4-4	
.74	P		3.53	6.26	3-3	
.65	B	(2)	3.47	6.07	4-5	
.74	E	(1)	3.53	6.07	3-4	
.58	E	(1)	3.58	6.26	2-3	
.231	B	3	3.58	6.26	2-1	z^5G^o-f^3D (100)
15	P	Ni	3.53	6.08	3-3	
18	P		3.58	6.09	2-2	
51	B	(4n)	3.40	6.09	5-4	z^5G^o-e^3F (101)
50	B	(1)	3.47	6.09	4-3	
.336	B	(2)	3.47	6.09	4-4	
.312	B	2	3.40	6.23	5-4	z^5G^o-f^3F (102)
.12	P		3.47	6.33	4-3	
.437	B	(3)	3.47	6.23	4-4	
.625	B	3	3.53	6.33	3-3	
.415	D	(1)	3.53	6.23	3-4	
.54	E	(1)	3.58	6.33	2-3	
.81	E	(1)	3.53	6.26	3-4	z^5G^o-e^1G (103)
.044	B	5	3.40	6.99	5-6	z^5G^o-e^3H (104)
.331	B	4	3.47	7.12	4-5	
.050	B	4n	3.53	7.22	3-4	
.32	P		3.40	7.13	5-4	z^5G^o-g^3G (105)
.22	P		3.40	7.01	5-5	
.613	B	4	3.47	7.13	4-4	
.364	B	3	3.47	7.01	4-5	
.332	B	4	3.53	7.13	3-4	
.642	B	15	3.37	7.02	6-7	z^5G^o-e^5H (106)
.320	B	10	3.40	7.13	5-6	
.827	B	5	3.47	7.22	4-5	
.880	B	5	3.53	7.29	3-4	
.992	B	4	3.58	7.31	2-3	
.09	P		3.40	7.22	5-5	
.591	B	5	3.37	7.03	6-5	z^5G^o-f^5F (107)
.013	B	2	3.40	7.14	5-4	
.60	P		3.47	7.23	4-3	
.98	P	Ni	3.53	7.28	3-2	
.91	P		3.58	7.31	2-1	
.186	B	8	3.40	7.03	5-5	
.241	B	5	3.47	7.14	4-4	
.26	P		3.53	7.23	3-3	
.807	B	10	3.37	7.03	6-6	z^5G^o-e^5G (108)
.950	B	6	3.40	7.14	5-5	
.370	B	4n	3.47	7.27	4-4	
.670	B	4	3.53	7.24	3-3	
.779	B	6	3.58	7.30	2-2	
.76	P		3.40	7.27	5-4	
.17	P	Ni	3.47	7.24	4-3	
.50	E	(1)	3.53	7.30	3-2	
.432	B	8	3.40	7.03	5-6	
.108	B	8	3.47	7.14	4-5	
.561	B	2n	3.58	7.24	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ni I continued						
7393.63	B	10	3.59	5.26	4-3	z^5F^o-e^3D (109)
7715.63	B	(7)	3.68	5.38	3-3	
7167.01	B	(4)	3.73	5.45	2-1	
7826.81	B	(4)	3.68	5.26	3-3	
7917.48	B	(7)	3.73	5.38	2-2	
7386.56	B	(2)	3.75	5.45	1-1	
8034.56	B	(1)	3.73	5.26	2-3	
6928.25	B	(2)	3.68	5.46	3-2	z^5F^o-e^1D (110)
5017.591	B	10	3.52	5.98	5-5	z^5F^o-e^5F (111)
4998.233	B	2	3.59	6.06	4-4	
5012.464	B	2	3.68	6.15	3-3	
4953.204	B	3	3.73	6.23	2-2	
4912.030	B	2	3.75	6.26	1-1	
4866.267	B	10	3.52	6.06	5-4	
4831.183	B	10	3.59	6.15	4-3	
4873.437	B	4	3.68	6.23	3-2	
4857.382	B	2	3.73	6.26	2-1	
5157.993	B	(2)	3.59	5.98	4-5	
5193.524	B	2	3.68	6.06	3-4	
5096.874	B	2	3.73	6.15	2-3	
5010.045	B	(2)	3.75	6.23	1-2	
4849.13	P		3.52	6.07	5-5	z^5F^o-e^3G (112)
4976.155	B	(1n)	3.59	6.07	4-4	
4980.161	B	12	3.59	6.07	4-5	
5168.660	B	6	3.68	6.07	3-4	
4873.37	P		3.73	6.26	2-3	
4953.334	D	(1n)	3.59	6.08	4-3	z^5F^o-f^3D (113)
5128.03	E	(1)	3.68	6.09	3-2	
4863.931	B	(2n)	3.73	6.26	2-1	
m5142.98	P	Ni	3.68	6.08	3-3	
5216.512	D	2	3.73	6.09	2-2	
4918.713	B	(2)	3.75	6.26	1-1	
4808.52	E	(1)	3.52	6.09	5-4	z^5F^o-e^3F (114)
4941.920	B	(2)	3.59	6.09	4-3	
4760.23	P		3.68	6.28	3-2	
4937.337	B	4	3.59	6.09	4-4	
5131.770	D	3	3.68	6.09	3-3	
4836.27	E	(1)	3.73	6.28	2-2	
5230.307	B	2	3.73	6.09	2-3	
4890.45	P		3.75	6.28	1-2	
4559.945	B	(3)	3.52	6.23	5-4	z^5F^o-f^3F (115)
4501.692	D	(1)	3.68	6.42	3-2	
4675.639	B	(2)	3.59	6.23	4-4	
4655.661	B	(2)	3.68	6.33	3-3	
4845.17	E	(1)	3.68	6.23	3-4	
4728.42	E	(1)	3.73	6.33	2-3	
4617.94	E	(1)	3.75	6.42	1-2	
4325.361	B	2	3.59	6.44	4-3	z^5F^o-g^3D (116)
4521.924	D	(1)	3.73	6.45	2-2	
3908.931	B	8n	3.59	6.75	4-5	z^5F^o-f^3G (117)
4025.44	D	(1N)	3.68	6.75	3-4	
3559.930	B	2	3.52	6.99	5-6	z^5F^o-e^3H (118)
3496.350	B	5	3.59	7.12	4-5	
3485.110	B	2n	3.68	7.22	3-4	
3396.50	P		3.59	7.22	4-4	
3542.00	E	(1)	3.52	7.01	5-4	z^5F^o-i^3F (119)
3611.418	D	(1)	3.59	7.01	4-4	
3537.634	D	(1)	3.52	7.01	5-5	z^5F^o-g^3G (120)
3482.73	E	(1)	3.59	7.13	4-4	
3483.62	P		3.68	7.23	3-3	
*3606.852	B	4	3.59	7.01	4-5	
3575.952	B	2	3.68	7.13	3-4	
3530.595	B	4	3.52	7.02	5-4	z^5F^o-e^5D (121)
3488.293	B	2	3.59	7.13	4-3	
3599.530	D	(1)	3.59	7.02	4-4	
m3624.72	P	Ni	3.73	7.13	3-3	
3431.342	B	7	3.52	7.13	5-6	z^5F^o-e^5H (122)
3396.184	B	6	3.59	7.22	4-5	
3432.878	B	4	3.68	7.29	3-4	
3444.251	B	5	3.73	7.31	2-3	
3337.36	P		3.59	7.29	4-4	
3405.50	P		3.68	7.31	3-3	
3516.234	B	8	3.52	7.03	5-5	z^5F^o-f^5F (123)
*3480.183	B	4	3.59	7.14	4-4	
3476.63	B	2n	3.68	7.23	3-3	
3467.732	B	4	3.73	7.28	2-2	
3467.12	E	(1)	3.75	7.31	1-1	
3415.67	P		3.52	7.14	5-4	
3428.42	P		3.68	7.28	3-2	
3573.37	P		3.68	7.14	3-4	
3517.03	P		3.73	7.23	2-3	
3518.634	B	8	3.52	7.03	5-6	z^5F^o-e^5G (124)
3477.864	B	2	3.59	7.14	4-5	
3442.559	B	4n	3.68	7.27	3-4	
3511.94	E	(1)	3.73	7.24	2-3	
*3480.183	B	4	3.75	7.30	1-2	
m3413.46	P	Ni	3.52	7.14	5-5	
3471.63	P		3.68	7.24	3-3	
3191.875	B	2	3.52	7.39	5-5	z^5F^o-g^5F (125)
7122.24	B	100	3.53	5.26	2-3	z^3P^o-e^3D (126)
7522.78	B	3	3.64	5.28	1-2	
7182.00	B	8	3.73	5.45	0-1	
7030.06	B	3	3.53	5.28	2-2	
6842.07	B	8	3.64	5.45	1-1	
6432.08	G	(1)	3.53	5.45	2-1	
6370.383	B	(4)	3.53	5.46	2-2	z^3P^o-e^1D (127)
6772.36	B	5	3.64	5.46	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ni I continued						
4713.84	P		3.53	6.15	2-3	z^3P^o-e^5F (128)
4795.84	E	(1)	3.64	6.22	1-2	
4864.282	B	(2n)	3.73	6.26	0-1	
4705.93	E	(1)	3.64	6.26	1-1	
4904.413	B	10	3.53	6.04	2-1	z^3P^o-e^3S (129)
5139.355	B	3	3.64	6.04	1-1	
5338.70	P		3.73	6.04	0-1	
4855.414	B	15	3.53	6.07	2-2	z^3P^o-e^3P (130)
5083.354	B	(4)	3.64	6.07	1-1	
4852.560	B	(2n)	3.53	6.07	2-1	
4811.999	B	(2)	3.64	6.21	1-0	
5085.479	B	(2)	3.64	6.07	1-2	
4829.028	B	15	3.53	6.08	2-3	z^3P^o-f^3D (131)
5042.195	B	4	3.64	6.09	1-2	
4870.845	B	2	3.73	6.26	0-1	
4815.92	E	(1)	3.53	6.09	2-2	
4713.069	B	(2)	3.64	6.26	1-1	
4513.90	P		3.53	6.26	2-1	
4753.436	B	4	3.64	6.24	1-1	z^3P^o-e^1P (132)
4913.970	B	3	3.73	6.24	0-1	
4506.302	D	(1)	3.53	6.27	2-2	z^3P^o-f^1D (133)
4703.808	B	4	3.64	6.27	1-2	
*4490.541	B	(3)	3.53	6.28	2-3	z^3P^o-e^1F (134)
4553.175	B	(3)	3.64	6.35	1-0	z^3P^o-e^1S (135)
4231.040	B	5	3.53	6.44	2-3	z^3P^o-g^3D (136)
4390.332	B	(2n)	3.64	6.45	1-2	
4258.107	B	(2)	3.73	6.63	0-1	
3844.276	B	(3N)	3.53	6.74	2-1	z^3P^o-f^3S (137)
3987.090	D	(2)	3.64	6.74	1-1	
3701.63	P		3.53	6.86	2-3	z^3P^o-f^1F (138)
7617.00	B	5	3.64	5.26	4-3	z^3F^o-e^3D (139)
7422.30	B	15	3.62	5.28	3-2	
7409.39	B	8	3.78	5.45	2-1	
7525.14	B	2	3.62	5.26	3-3	
6690.80	B	(2)	3.62	5.46	3-2	z^3F^o-e^1D (140)
7327.67	B	(4)	3.78	5.46	2-2	
5365.748	B	(2)	3.64	5.98	4-5	z^3F^o-e^5F (141)
5058.03	B	(3)	3.62	6.06	3-4	
5099.332	B	5	3.64	6.06	4-4	
4886.992	B	(3)	3.62	6.15	3-3	
5067.82	E	(1)	3.78	6.22	2-2	
4925.578	B	2	3.64	6.15	4-3	
4754.768	B	3	3.62	6.22	3-2	
4967.551	D	(1)	3.78	6.26	2-1	
5039.259	B	(2r)	3.62	6.07	3-2	z^3F^o-e^3P (142)
5080.523	B	30	3.64	6.07	4-5	z^3F^o-e^3G (143)
5035.374	B	12	3.62	6.07	3-4	
4984.126	B	10	3.78	6.26	2-3	
5076.321	B	(2)	3.64	6.07	4-4	
4681.05	P		3.62	6.26	3-3	
5051.527	B	(2N)	3.64	6.08	4-3	z^3F^o-f^3D (144)
4996.850	B	(2n)	3.62	6.09	3-2	
5010.961	B	(3n)	3.62	6.08	3-3	
5035.961	B	(3N)	3.64	6.09	4-4	z^3F^o-e^3F (145)
5000.335	B	4	3.62	6.09	3-3	
4945.458	B	2	3.78	6.28	2-2	
4646.94	P		3.62	6.28	3-2	
4995.65	P		3.62	6.09	3-4	
5347.71	P		3.78	6.09	2-3	
4763.950	B	4	3.64	6.33	4-4	z^3F^o-f^3F (146)
4547.334	B	3	3.62	6.33	3-3	
4666.994	B	2	3.78	6.42	2-2	
4580.619	B	(3)	3.64	6.33	4-3	
4400.26	E	(1)	3.62	6.42	3-2	
4727.851	B	(2)	3.62	6.23	3-4	
4832.704	B	2	3.78	6.33	2-3	
4664.32	P		3.62	6.27	3-2	z^3F^o-f^1D (147)
4965.14	E	(1)	3.78	6.27	2-2	
4647.42	P	(1)	3.62	6.28	3-3	z^3F^o-e^1F (148)
4946.037	B	(3)	3.78	6.28	2-3	
4400.870	B	3	3.64	6.44	4-3	z^3F^o-g^3D (149)
4355.911	B	3	3.62	6.45	3-2	
4330.720	B	2	3.78	6.63	2-1	
4370.041	B	(3)	3.62	6.44	3-3	
4038.27	P		3.64	6.70	4-4	z^3F^o-g^3F (150)
4009.984	B	(3)	3.62	6.76	3-3	
3958.60	P		3.78	6.90	2-2	
4035.96	P		3.64	6.70	4-3	
4230.39	P		3.78	6.70	2-3	
3970.503	B	10n	3.64	6.75	4-5	z^3F^o-f^3G (151)
3944.126	B	12n	3.62	6.75	3-4	
3912.310	B	8n	3.78	6.93	2-3	
3511.613	D	2	3.62	7.13	3-4†	z^3F^o-g^3G (152)
3651.67	P		3.64	7.02	4-4	z^3F^o-e^5D (153)
3537.343	D	(1)	3.64	7.13	4-3	
3528.891	B	(3)	3.64	7.14	4-4	z^3F^o-f^5F (154)
m3523.47	P	Ni	3.78	7.28	2-2	
3494.703	D	(1)	3.78	7.31	2-1	
3526.540	B	3	3.64	7.14	4-5	z^3F^o-e^5G (155)

I A	Type	Element	Multiplet No.
6489.10		Yb I	3
6489.68		Zr I	65
6490.344		Co I	81
6491.28		Fe II	
6491.28		N I	21
6491.61	P	Ti II	91
6491.712		Mn I	39
6492.0		N II	45
6493.05		Fe II	
6493.780		Ca I	18
6494.11		Gd II	123
6494.52	P	Fe I	1255
6494.985		Fe I	168
6495.45		Al II	65
6495.779		Fe I	1253
6496.456		Fe I	1258
6496.896		Ba II	2
6497.689		Ti I	102
6498.19		La II	104
6498.759		Ba I	6
6498.950		Fe I	13
6499.52		N I	21
6499.649		Ca I	18
6500.25		A II	26
6501.212		Cr I	16
6501.681		Fe I	
6503.989		Sr I	8
6504.164		V I	48
6504.9		N II	45
6506.33		Fe II	
6506.45		N I	21
6506.5279		Ne I	3
6508.135		Ti I	102
6508.742		Ca I	18
6509.16		A II	21
6509.56		Fe I	1012
6511.62		Hf II	69
6512.61		Hf II	49
6516.026		Cr I	265
6516.053		Fe II	40
6517.01		Fe II	
6517.27		V II	230
6518.376		Fe I	342
6519.371		Mn I	39
6521.39		S II	25
6522.3		N II	45
6522.38		Cl II	59
6524.76	P	Fe I	1280
6526.99		La II	33
6527.20	P	Si I	52
6527.312		Ba I	6
6527.49		Si I	62
6528.53		Fe I	
6529.197		Cr I	265
6531.44		V I	48
6531.66		Hf II	48
6532.891		Ni I	64
6533.0		N II	45
6533.97		Fe I	1197
6537.921		Cr I	16
6539.72		Fe I	405
6541.49	P	Fe I	1195
6542.80		Hf II	100
6543.17		La I	7
6543.51		V I	48
6543.98		Fe I	1139
6545.2		N II	45
6545.80		Mg II	23
6546.245		Fe I	268
6546.276		Ti I	102
6546.791		Sr I	8
6547.58	P	Fe I	13
6548.72		Hf II	
6550.01		Hf II	111
6550.244		Sr I	12
6551.466		Co I	54
6551.68	P	Fe I	13
6552.77		Fe I	1325
6554.18		La II	109
6554.226		Ti I	102
6555.20		Si I	62
6555.87	P	Fe I	1007
6556.066		Ti I	102
6556.79		Fe I	1255
6557.40		Y I	1
6557.87		Sc I	24
6557.91		Hf II	66
6558.02		V I	59
6558.05		Sc I	24
6559.580		Ti II	91
6560.099		He II	2
6560.68		Si I	62
6561.032		D	1
6562.817		H	1
6563.403		Co I	80
6563.86		Hf II	81
6565.62		Ti I	
6565.88		V I	48
6567.22	P	Fe I	168
6567.39		Hf II	90
6568.00		Gd II	121
6569.261		Fe I	1253
6569.31		Sm II	62
6527.10		He II	7
6570.834		Mn I	51
6570.96		La II	47
6571.22		Fe I	1121
6572.781		Ca I	1
6572.900		Cr I	16
6574.238		Fe I	13
6575.022		Fe I	206
6575.180		Ti I	286
6576.95	P	Ni I	283
6578.03		C II	2
6578.51		La I	1
6578.96		V I	32
6580.22		Ni I	265
6580.96		Cr I	16
6581.22		Fe I	34
6582.85		C II	2
6584.53		Hf II	99
6584.89		Y I	1
6586.328		Ni I	64
6586.343		Mn I	51
6586.69		Fe II	
6587.75		C I	22
6588.91		Sm I	1
6591.32		Fe I	1229
6591.834		Co I	202
6592	P	C IV	10
6592.472		Ni I	248
6592.91	P	Ti I	102
6592.919		Fe I	268
6593.878		Fe I	168
6595.326		Ba I	6
6595.869		Co I	174
6597.556		Cr I	282
6597.607		Fe I	1253
6598.594		Ni I	249
6598.9529		Ne I	6
6599.112		Ti I	49
6601.13	P	Fe I	1280
6603.20	P	Fe I	862
6603.67	P	Fe I	860
6604.60		Sc II	19
6604.67		Fe I	1254
6605.546		Mn I	51
6605.98		V I	48
6607.02	P	Ti II	91
6607.82		V I	59
6608.03		Fe I	109
6609.116		Fe I	206
6609.20		Hf II	105
6609.56		Fe I	
6609.64		Al II	76
6609.68	P	Fe I	13
6610.04		Gd II	108
6610.58		N II	31
6612.17		Cr I	282
6613.74		Y II	26
6613.83	P	Fe I	13
6615.03	P	Fe I	1155
6617.126		Co I	202
6617.14	P	Ni I	248
6617.266		Sr I	8
6621.24		Ni I	97
6622.28		Gd II	110
6622.41	P	Fe I	1157
6622.53		N I	20
6623.78	P	Fe I	1010
6624.86		V I	48
6625.04		Fe I	13
6627.28		Fe II	210
6627.558		Fe I	1174
6627.62		O II	85
6630.015		Cr I	16
6630.5		N II	41
6632.438		Co I	111
6633.44		Fe I	1258
6633.764		Fe I	1197
6634.10	P	Fe I	1258
6634.36		Gd II	94
6635.15		Ni I	264
6635.68	P	Fe I	1155
6636.53		La II	61
6637.01		N I	20
6638.24		A II	20
6639.35	P	Fe I	1279
6639.71	P	Fe I	1195
6639.72		A II	20
6639.90	P	Fe I	1007
6640.90		O II	4
6641.06		S II	25
6642.79		La II	103
6643.023		Cr I	256
6643.536		Sr I	8
6643.641		Ni I	43
6643.79		A II	20
6644.60		Hf II	34
6644.96		N I	20
6645.11		Eu II	8
6646.52		N I	20
6646.90	P	Fe I	1156
6646.98		Fe I	206
6647.06		Hf II	65
6647.90	P	Fe I	551
6648.08	P	Fe I	13
6653.41		N I	20
6653.75		Cl II	38
6653.78		O I	65
6653.88		Fe I	1052
6656.61		N I	20
6657.54		Cr I	282
6660.49		Si II	
6661.076		Cr I	282
6661.39		Ni I	246
6661.68		Cl II	38
6663.26		Fe I	1195
6663.446		Fe I	111
6665.42	P	Fe I	1156
6665.43	P	Fe I	34
6666.36		A II	25
6666.548		Ti I	101
6666.94		O II	85
6667.17	P	Fe I	110
6667.42	P	Fe I	168
6667.73		Fe I	1228
6669.257		Cr I	282
6671.36		Fe I	1343
6671.41		La II	33
6671.43	P	Fe I	1255
6671.51		Sm I	1
6671.88		Si II	
6672.84		V II	229
6672.88	P	Fe I	205
6673.84	P	Fe I	1254
6675.271		Ba I	6
6676.86	P	Fe I	1194
6677.24		Cr I	256
6677.25		Ti I	274
6677.33		Fe II	210
6677.49	P	Fe I	1280
6677.54	P	Fe I	551
6677.96	P	Fe I	205
6677.993		Fe I	268
6678.03		Zr II	128
6678.149		He I	46
6678.19		O II	85
6678.2764		Ne I	6
6678.60	P	Ti I	213
6678.818		Co I	54
6680.19		Cr I	282
6680.26		Ti II	112
6681.03		Cl II	38
6681.23		Gd II	94
6681.34	P	Fe I	1155
6682.23	P	Fe I	1008
6683.2		He II	7
6684.36		A II	20
6686.04		Cl II	38
6687.57		Y I	1
6690.80		Ni I	140
6692.47	P	Fe I	1192
6693.842		Ba I	6
6695.97		Al I	5
6696.30	P	Fe I	1255
6696.39		Al II	29
6698.63		Al I	5
6699.14		Fe I	1228
6699.46		Al II	29

tory ef	Int	E P Low	E P High	J	Multiplet (No)
nued					
G	(1)	4.22	6.27	2-2	y^3D^o-f^1D
B	6n	4.25	6.27	1-2	(251)
B	2n	4.22	6.28	2-3	y^3D^o-e^1F
G	(2)	4.25	6.35	1-0	(252) y^3D^o-e^1S
B	(2)	4.14	6.70	3-4	(253) y^3D^o-g^3F
P		4.22	6.70	2-3	(254)
E	(1)	4.25	6.90	1-2	
B	(3)	4.14	6.70	3-3	
B	(3)	4.14	7.13	3-4	y^3D^o-g^3G
P		4.22	7.23	2-3	(255)
P		4.14	7.05	3-3	y^3D^o-i^3D
P	(1)	4.22	7.05	2-3	(256)
B	(2)Fe?	4.15	6.06	4-4	z^1G^o-e^5F (257)
B	(5n)	4.15	6.07	4-5	z^1G^o-e^3G (258)
B	(1)	4.15	6.23	4-4	z^1G^o-f^3F
B	(2)	4.15	6.33	4-3	(259)
E	(1)	4.15	6.70	4-4	z^1G^o-g^3F
B	2	4.15	6.70	4-3	(260)
B	5	4.15	6.86	4-3	z^1G^o-f^1F (261)
E	(1)	4.15	6.94	4-4	z^1G^o-f^1G (262)
B	(2)Fe?	4.40	6.08	3-3	y^1F^o-f^3D (263)
B	3	4.40	6.26	3-4	y^1F^o-e^1G (264)
B	(2n)	4.40	6.28	3-3	y^1F^o-e^1F (265)
B	(1)	4.52	6.07	2-1	y^1D^o-e^3P (266)
B	(3)	4.52	6.08	2-3	y^1D^o-f^3D
B	(3)	4.52	6.09	2-2	(267)
G	(1)	4.52	6.26	2-1	
B	(5)	4.52	6.09	2-3	y^1D^o-e^3F (268)
B	(2)	4.52	6.24	2-1	y^1D^o-e^1P (269)
B	(2)	4.52	6.27	2-2	y^1D^o-f^1D (270)
B	3	4.52	6.28	2-3	y^1D^o-e^1F (271)
B	3	4.52	6.70	2-3	y^1D^o-g^3F (272)
B	2	4.52	6.86	2-3	y^1D^o-f^1F (273)
B	2	4.52	7.00	2-2?	y^1D^o-f^3P (274)
A	10	5.26	6.70	3-4	x^3D^o-g^3F (275)
B	(4)Fe?	5.26	7.00	3-2	x^3D^o-f^3P (276)
B	(2)	5.26	7.01	3-4	x^3D^o-i^3F (277)
B	(3)	5.39	7.00	3-2	x^3F^o-f^3P (278)
G	(1)	5.26	7.01	4-5	x^3F^o-g^3G (279)
B	(3)	5.39	7.05	3-3	x^3F^o-i^3D (280)
G	(1)	5.27	6.86	2-3	y^3P^o-f^1F (281)
B	(2)	5.28	7.00	3-2	w^3D^o-f^3P
G	(3)	5.49	7.13	2-1	(282)
G	(1)	5.57	7.22	1-0	
B	(1)	5.28	7.01	3-4	w^3D^o-i^3F
P		5.49	7.16	2-3	(283)
P	N1	5.57	7.24	1-2	
P		5.28	7.16	3-3	
A	30	5.32	6.70	5-4	y^3G^o-g^3F
A	10	5.47	6.70	4-3	(284)
A	10	5.47	6.86	4-3	y^3G^o-f^1F
P	1	5.59	6.86	3-3	(285)
B	(7)	5.32	6.99	5-6	y^3G^o-e^3H
G	(5)	5.47	7.12	4-5	(286)
P		5.59	7.22	3-4	
B	(1)	5.32	7.01	5-5	y^3G^o-g^3G
B	(2)	5.47	7.13	4-4	(287)
G	(2)	5.59	7.23	3-3	
B	(3)	5.32	7.13	5-6	y^3G^o-e^5H
B	(2)	5.47	7.22	4-5	(288)
B	(4)	5.59	7.29	3-4	
A	30	5.34	6.70	4-4	w^3F^o-g^3F
A	5	5.50	6.70	3-3	(289)
G	(1)	5.61	7.13	2-1	w^3F^o-f^3P (290)
B	(4)	5.34	7.01	4-4	w^3F^o-i^3F
G	(1)	5.50	7.16	3-3	(291)
G	(1)	5.61	7.24	2-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
N1 I continued						
7381.94	B	(5)	5.34	7.01	4-5	w^3F^o-g^3G
7559.62	B	(3)	5.50	7.13	3-4	(292)
7624.75	G	(2)	5.61	7.23	2-3	
6861.24	B	(3)	5.34	7.14	4-5	w^3F^o-e^5G
7297.75	B	(3)	5.61	7.30	2-2	(293)
7220.79	B	(3)	5.34	7.05	4-3	w^3F^o-i^3D (294)
9689.35	A	3	5.42	6.70	2-3	x^1D^o-g^3F (295)
8586.20	P	1	5.42	6.86	2-3	x^1D^o-f^1F (296)

Strongest Unclassified Lines of N1 I

10295.05	A	5		
9396.57	A	20		
6362.414	D	(5)		
6012.251	B	(5)		
4594.908	B	(5n)		
4142.320	B	(4)		
4006.136	B	3	V	
3762.618	B	(3)		
3665.924	B	2	III	
3647.71	E	2	II	
3335.59	E	2n	V	
3332.180	B	6n	V	
3309.428	B	2n	V	
3268.064	B	4n	V	
3264.44	E	2n	V	
3233.88	E	2	V	
3199.342	B	3n	V	
3151.259	B	4n	V	

N1 II I P 18.4 Anal C List A Apr 1942

*3513.933§	B	8	2.85	6.36	$2\frac{1}{2}$-$3\frac{1}{2}$	b^2D-z^4D^o (1)
3454.16	A	5	2.94	6.51	$1\frac{1}{2}$-$2\frac{1}{2}$	
3373.98	A	4	2.85	6.51	$2\frac{1}{2}$-$2\frac{1}{2}$	
3350.42	A	5	2.94	6.62	$1\frac{1}{2}$-$1\frac{1}{2}$	
3274.90	A	3	2.85	6.62	$2\frac{1}{2}$-$1\frac{1}{2}$	
3290.69	A	1	2.94	6.69	$1\frac{1}{2}$-$\frac{1}{2}$	
3208.91	A	1	2.85	6.70	$2\frac{1}{2}$-$3\frac{1}{2}$	b^2D-z^4G^o (2)
3032.44	A	2	2.85	6.92	$2\frac{1}{2}$-$2\frac{1}{2}$	b^2D-z^4F^o
3063.93	A	2	2.94	6.97	$1\frac{1}{2}$-$1\frac{1}{2}$	(3)
3769.455	B	5	3.09	6.36	$2\frac{1}{2}$-$3\frac{1}{2}$	a^4P-z^4D^o
3576.762	B	3	3.06	6.51	$1\frac{1}{2}$-$2\frac{1}{2}$	(4)
3471.35	C	2	3.07	6.62	$\frac{1}{2}$-$1\frac{1}{2}$	
3608.7	P		3.09	6.51	$3\frac{1}{2}$-$2\frac{1}{2}$	
3465.63	C	1	3.06	6.62	$1\frac{1}{2}$-$1\frac{1}{2}$	
3407.30	A	8	3.07	6.69	$\frac{1}{2}$-$\frac{1}{2}$	
3495.6	P		3.09	6.62	$2\frac{1}{2}$-$1\frac{1}{2}$	
3401.76	A	2	3.06	6.69	$1\frac{1}{2}$-$\frac{1}{2}$	
3290.54	A	1?	3.09	6.84	$2\frac{1}{2}$-$3\frac{1}{2}$	a^4P-z^4F^o (5)
2988.05	A	5	3.09	7.22	$2\frac{1}{2}$-$2\frac{1}{2}$	a^4P-z^2F^o (6)
3087.07	A	20	3.09	7.09	$2\frac{1}{2}$-$2\frac{1}{2}$	a^4P-z^2D^o † (7)
3397.82	A	1	3.59	7.22	$1\frac{1}{2}$-$2\frac{1}{2}$	a^2P-z^2F^o (8)
4362.10	C	1	4.01	6.84	$4\frac{1}{2}$-$3\frac{1}{2}$	a^2G-z^4F^o
4244.80	C	1	4.01	6.92	$3\frac{1}{2}$-$2\frac{1}{2}$	(9)
4384.6	P		4.01	6.83	$4\frac{1}{2}$-$4\frac{1}{2}$	a^2G-z^2G^o
4192.07	C	1	4.01	6.96	$3\frac{1}{2}$-$3\frac{1}{2}$	(10)
4067.051	B	3	4.01	7.05	$4\frac{1}{2}$-$3\frac{1}{2}$	a^2G-z^2F^o
3849.58	B	2	4.01	7.22	$3\frac{1}{2}$-$2\frac{1}{2}$	(11)
4071.0	P		4.01	7.05	$3\frac{1}{2}$-$3\frac{1}{2}$	
4015.50	C	1	4.01	7.09	$3\frac{1}{2}$-$2\frac{1}{2}$	a^2G-z^2D^o (12)
3881.92	C	1	8.22	11.40	$2\frac{1}{2}$-$3\frac{1}{2}$	z^4P^o-e^4F (13)

Measures inadequate for preparation of list of stronger unclassified lines of N1 II

Cu I I P 7.69 Anal A List D Apr 1942

3247.540//	A	1000	0.00	3.80	$\frac{1}{2}$-$1\frac{1}{2}$	4^2S-4^2P^o
3273.957	A	600	0.00	3.77	$\frac{1}{2}$-$\frac{1}{2}$	(1)
5105.541	A	300	1.38	3.80	$2\frac{1}{2}$-$1\frac{1}{2}$	$4s^2\ ^2D$-4^2P^o
5782.132	A	200	1.64	3.77	$1\frac{1}{2}$-$\frac{1}{2}$	(2)
5700.240	A	30	1.64	3.80	$1\frac{1}{2}$-$1\frac{1}{2}$	
3093.989	A	40	1.38	5.37	$2\frac{1}{2}$-$3\frac{1}{2}$	$4s^2\ ^2D$-$4s4p^4D^o$†
3208.231	A	60	1.64	5.48	$1\frac{1}{2}$-$2\frac{1}{2}$	(3)
3010.838	A	100	1.38	5.48	$2\frac{1}{2}$-$2\frac{1}{2}$	
3194.099	A	100	1.64	5.50	$1\frac{1}{2}$-$1\frac{1}{2}$	
3063.411	A	80	1.64	5.66	$1\frac{1}{2}$-$1\frac{1}{2}$	$4s^2\ ^2D$-$4s4p^2P^o$† (4)
2997.364	A	80	1.64	5.75	$1\frac{1}{2}$-$2\frac{1}{2}$	$4s^2\ ^2D$-$4s4p^3D^o$†
3036.101	A	100	1.64	5.70	$1\frac{1}{2}$-$1\frac{1}{2}$	(5)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cu I continued						
8092.634	A	300	3.80	5.33	$1\frac{1}{2}$-$\frac{1}{2}$	4^2P^o-5^2S
7933.130	A	160	3.77	5.33	$\frac{1}{2}$-$\frac{1}{2}$	(6)
5218.202	A	80	3.80	6.17	$1\frac{1}{2}$-$2\frac{1}{2}$	4^2P^o-4^2D
5153.235	A	100	3.77	6.16	$\frac{1}{2}$-$1\frac{1}{2}$	(7)
5220.070	A	25	3.80	6.16	$1\frac{1}{2}$-$1\frac{1}{2}$	
4530.785	A	110	3.80	6.52	$1\frac{1}{2}$-$\frac{1}{2}$	4^2P^o-6^2S
4480.350	A	100	3.77	6.52	$\frac{1}{2}$-$\frac{1}{2}$	(8)

Cu II I P 20.18 Anal A List D May 1942

4555.922	A	(100)	8.20	10.91	2-2	$4p^3P^o$-$s^2\ ^3P$ (1)
4832.236	A	30	8.38	10.94	1-1	
4505.997	A	(75)	8.20	10.94	2-1	
4758.421	A	30	8.38	10.98	1-0	
4889.690	A	30	8.38	10.91	1-2	
5060.635	A	30	8.50	10.94	0-1	
3686.555	A	(100)	8.45	11.80	3-4	$4p^3F^o$-$s^2\ ^1G$ (2)
4043.502	A	75	8.75	11.80	3-4	$4p^3D^o$-$s^2\ ^1G$ (3)
4671.686	A	40	14.14	16.78	1-2	$4d^3S$-$4f^3P^o$
4681.990	A	50	14.14	16.77	1-1	(4)
4673.555	A	30	14.14	16.78	1-0	
4909.726	A	100	14.27	16.78	5-6	$4d^3G$-$4f^3H^o$ †
4931.653	A	100	14.28	16.78	4-5	(5)
4918.373	A	30	14.54	17.05	3-4	
4985.503	A	40	14.33	16.81	3-4	$4d^3D$-$4f^3F^o$ †
5088.260	A	30	14.37	16.79	2-3	(6)
4937.196	A	20	14.56	17.06	1-2	
5051.778	A	60	14.37	16.81	4-5	$4d^3F$-$4f^3G^o$ †
5012.611	A	20	14.36	16.82	3-4	(7)
5067.082	A	30	14.63	17.07	2-3	
4812.940	A	40	14.47	17.04	1-2	$4d^1P$-$4f^1D^o$ (8)
4953.733	A	50	14.55	17.04	4-5	$4d^1G$-$4f^1H^o$ (9)
5006.787	A	30	14.59	17.05	2-3	$4d^1D$-$4f^1F^o$ (10)
5065.448	A	40	14.63	17.06	3-4	$4d^1F$-$4f^1G^o$ (11)

Zn I I P 9.35 Anal A List B May 1942

3075.901	A	90	0.00	4.01	0-1	4^1S-4^3P^o (1)
4810.534	A	65	4.06	6.63	2-1	4^3P^o-5^3S
4722.159	A	75	4.01	6.63	1-1	(2)
4680.138	A	45	3.99	6.63	0-1	
4292.885	A	8	4.01	6.89	1-0	4^3P^o-5^1S (3)
3345.020	A	150	4.06	7.75	2-3	4^3P^o-4^3D
3302.588	A	150	4.01	7.75	1-2	(4)
3282.333	A	100	3.99	7.75	0-1	
3345.572	A	100	4.06	7.75	2-2	
3302.941	A	125	4.01	7.75	1-1	
3345.934	A	30	4.06	7.75	2-1	
3072.062	A	70	4.06	8.08	2-1	4^3P^o-6^3S
3035.781	A	35	4.01	8.08	1-1	(5)
3018.352	A	30	3.99	8.08	0-1	
6362.347	A	100	5.77	7.71	1-2	4^1P^o-4^1D (6)
5181.995	A	30	5.77	8.15	1-0	4^1P^o-6^1S (7)
4629.814	A	12	5.77	8.44	1-2	4^1P^o-5^1D (8)
4113.210	A	12	5.77	8.77	1-2	4^1P^o-6^1D (9)
6928.319	A	10	6.63	8.41	1-2	5^3S-6^3P^o
6938.472	A	6	6.63	8.40	1-1	(10)
6943.202	A	2	6.63	8.40	1-0	

Zn II I P 17.89 Anal A List C May 1942

7478.79	B	20	8.09	7.74	$1\frac{1}{2}$-$2\frac{1}{2}$	4^2P^o-$d^9s^2\ ^2D$
5894.351	A	20	5.98	8.08	$\frac{1}{2}$-$1\frac{1}{2}$	(1)
6214.58	B	12	6.09	8.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
7588.48	B	15	10.92	12.54	$\frac{1}{2}$-$1\frac{1}{2}$	5^2S-5^2P^o
7732.50	B	10	10.92	12.51	$\frac{1}{2}$-$\frac{1}{2}$	(2)
4911.664	A	25	11.96	14.48	$2\frac{1}{2}$-$3\frac{1}{2}$	4^2D-4^2F^o
4924.043	A	30	11.97	14.48	$1\frac{1}{2}$-$2\frac{1}{2}$	(3)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ga I I P 5.97 Anal A List B May 1942						
4173.048//	A	10R	0.10	3.06	1½– ½	$4^2P^o-5^2S$
4032.975	A	10R	0.00	3.06	½– ½	(1)
Ga II See introduction						
Ge I I P 8.09 Anal A List B June 1942						
3124.817	B	(20)	0.88	4.83	2–2	$4p^1D-5s^3P^o$
3269.494	B	(40)	0.88	4.65	2–1	(1)
3039.064	B	(60)	0.88	4.94	2–1	$4p^1D-5s^1P^o$ (2)
4685.837	B	(20)	2.02	4.65	0–1	$4p^1S-5s^3P^o$ (3)
4226.570	B	(50)	2.02	4.94	0–1	$4p^1S-5s^1P^o$ (4)
3067.132	B	(10)	2.02	6.04	0–1	$4p^1S-4d^3D^o$ (5)
11125.28	A	25	4.83	5.94	2–3	$5s^3P^o-5p^3D$†
10947.51	A	30	4.65	5.78	1–2	(6)
10734.14	A	25	4.62	5.77	0–1	
10405.05	A	40	4.83	6.02	2–2	$5s^3P^o-5p^3P$†
9625.72	A	35	4.65	5.94	1–1	(7)
Ge II I P 15.9 Anal A List B May 1942						
5893.42	A	25	7.70	9.80	½–1½	$5^2S-5^2P^o$
*6031.09	A	20	7.70	9.75	½– ½	(1)
4814.80	B	(200)	9.80	12.36	1½–2½	$5^2P^o-5^2D$
4743.00	B	(50)	9.75	12.36	½–1½	(2)
4824.20	B	(10)	9.80	12.36	1½–1½	
As I I P 10 Anal B List B May 1942						
3032.85	A	40	2.30	6.37	1½–1½	$4p^3P^o-5s^4P$†
3075.32	A	20	2.24	6.26	½– ½	(1)
3119.60	A	50	2.30	6.26	1½– ½	
9923.03	A	(150)	6.53	7.77	2½–2½	$5s^4P-5p^4P^o$
10023.98	A	(100)	6.37	7.60	1½–1½	(2)
9833.76	A	(80)	6.26	7.51	½– ½	
8654.16	A	100	6.53	7.96	2½–3½	$5s^4P-5p^4D^o$
8564.71	A	100	6.37	7.81	1½–2½	(3)
8541.65	A	50	6.26	7.70	½–1½	
9836.69	A	(140)	6.53	7.81	2½–2½	
9267.29	A	25	6.37	7.70	1½–1½	
8821.76	A	150	6.26	7.66	½– ½	
9597.94	A	(100)	6.37	7.66	1½– ½	
8869.69	A	100	6.53	7.92	2½–3½	$5s^4P-5p^2D^o$†
8428.94	A	100	6.26	7.72	½–1½	(4)
9300.62	A	50	6.53	7.86	2½–1½	$5s^4P-5p^4S^o$
8305.62	A	50	6.37	7.86	1½–1½	(5)
As II I P 19.78 Anal B List C June 1942						
6170.47	A	10	9.77	11.77	1–1	$5s^3P^o-5p^1P$
6023.81	A	10	9.72	11.77	0–1	(1)
5651.53	A	10	10.06	12.25	2–3	$5s^3P^o-5p^3D$†
5558.31	A	10	9.77	11.99	1–2	(2)
5331.54	A	10	10.06	12.38	2–2	$5s^3P^o-5p^3P$†
4985.60	A	8	9.77	12.24	1–1	(3)
4730.92	A	10	9.77	12.38	1–2	
5105.80	A	10	10.06	12.48	2–1	$5s^3P^o-5p^3S$†
4552.37	A	8	9.77	12.48	1–1	(4)
6110.30	A	10	10.22	12.24	1–1	$5s^1P^o-5p^3P$† (5)
5107.80	A	10	10.22	12.64	1–2	$5s^1P^o-5p^1D$ (6)
4352.25	A	10	10.22	13.06	1–0	$5s^1P^o-5p^1S$ (7)
Se I I P 9.71 Anal B List C June 1942						
8918.88	A	25	5.95	7.33	2–3	$5^5S^o-5^5P$
9002.00	A	15	5.95	7.32	2–2	(1)
9038.65	A	10	5.95	7.31	2–1	
10327.30	A	3	6.30	7.49	1–2	$5^3S^o-5^3P$
10386.45	A	2	6.30	7.48	1–1	(2)
10307.60	A	1	6.30	7.49	1–0	
Se II See introduction						
Br I See introduction						
Br II See introduction						
Kr I See introduction						
Kr II See introduction						
Rb I I P 4.16 Anal A List C May 1942						
7800.227//	A	10R	0.00	1.58	½–1½	$5^2S-5^2P^o$
7947.60	A	10R	0.00	1.55	½– ½	(1)
4201.851	B	8R	0.00	2.94	½–1½	$5^2S-6^2P^o$
4215.556	B	7R	0.00	2.93	½– ½	(2)
Rb II See introduction						
Sr I I P 5.67 Anal A List C May 1942						
6892.585	A	200	0.00	1.79	0–1	$5^1S-5^3P^o$ (1)
4607.331//	A	600R	0.00	2.68	0–1	$5^1S-5^1P^o$ (2)
7070.071	A	2000	1.84	3.58	2–1	$5^3P^o-6^3S$
6878.313	A	1000	1.79	3.58	1–1	(3)
6791.022	A	500	1.77	3.58	0–1	
4962.263	A	40	1.84	4.33	2–3	$5^3P^o-5^3D$
4872.493	A	40	1.79	4.32	1–2	(4)
*4832.075	B	50	1.77	4.32	0–1	
4967.944	A	20	1.84	4.32	2–2	
4876.06	C	15	1.79	4.32	1–1	
4971.668	A	2	1.84	4.32	2–1	
4811.881	A	40	1.84	4.40	2–2	$5^3P^o-5p^3\ ^3P$ (5)
4784.320	A	30	1.79	4.37	1–1	
4876.325	B	20	1.84	4.37	2–1	
*4832.075	B	50	1.79	4.34	1–0	
4722.278	A	30	1.79	4.40	1–2	
4741.922	A	30	1.77	4.37	0–1	
4438.044	A	25	1.84	4.62	2–1	$5^3P^o-7^3S$
4361.710	A	20	1.79	4.62	1–1	(6)
4326.445	A	8	1.77	4.62	0–1	
3351.246	A	150	1.84	5.52	2–2	$5^3P^o-4d^2\ ^3P$
3322.231	A	30	1.79	5.51	1–1	(7)
3366.333	A	50	1.84	5.51	2–1	
3329.988	A	30	1.79	5.50	1–0	
3307.534	A	50n	1.79	5.52	1–2	
3301.734	A	50	1.77	5.51	0–1	
6408.463	A	100	2.26	4.19	3–4	$4^3D-4d5p^3P^o$
6503.989	A	80	2.25	4.15	2–3	(8)
6617.266	A	50	2.24	4.11	1–2	
6546.791	A	20	2.26	4.15	3–3	
6643.536	A	20	2.25	4.11	2–2	
5480.865	A	40	2.26	4.51	3–3	$4^3D-4d5p^3D^o$
5504.184	A	30	2.25	4.49	2–2	(9)
5521.765	A	25	2.24	4.48	1–1	
5534.794	A	15	2.26	4.49	3–2	
5540.051	A	15	2.25	4.48	2–1	
5450.836	A	15	2.25	4.51	2–3	
5486.136	A	15	2.24	4.49	1–2	
4891.980	A	25	2.26	4.78	3–4	$4^3D-4^3F^o$
4868.700	A	20	2.25	4.78	2–3	(10)
4855.045	A	20	2.24	4.78	1–2	
5156.040	A	8	2.49	4.88	2–3	$4^1D-4^1F^o$ (11)
6550.244	A	60	2.68	4.56	1–2	$5^1P^o-5p^3\ ^1D$ (12)
Sr II I P 10.98 Anal E List A May 1942						
4077.714//	A	400r	0.00	3.03	½–1½	$5^2S-5^2P^o$
4215.524	A	300r	0.00	2.93	½– ½	(1)
10327.314	A	1000	1.83	3.03	2½–1½	$4^2D-5^2P^o$
10914.877	A	200	1.80	2.93	1½– ½	(2)
10036.658	A	300	1.80	3.03	1½–1½	
4305.447	A	40	3.03	5.89	1½– ½	$5^2P^o-6^2S$
4161.796	A	30	2.93	5.89	½– ½	(3)
3464.457	A	50	3.03	6.59	1½–2½	$5^2P^o-5^2D$
3380.711	A	50	2.93	6.58	½–1½	(4)
3474.887	A	10	3.03	6.58	1½–1½	
Y I I P 6.5 Anal A List C June 1942						
6584.89	A	5	0.07	1.94	2½–3½	$a^2D-z^4F^o$ (1)
6557.40	A	30	0.00	1.88	1½–2½	
6793.71	A	80	0.07	1.88	2½–2½	
6687.57	A	80	0.00	1.85	1½–1½	
6933.55	A	6	0.07	1.85	2½–1½	
Y I continued						
6435.02	A	500	0.07	1.98	2½–2½	$a^2D-z^2D^o$
6191.73	A	100?	0.00	1.99	1½–1½	(2)
6402.005	B	50	0.07	1.99	2½–1½	
6232.59	A	50?	0.00	1.98	1½–2½	
6138.44	A	15?	0.07	2.08	2½–2½	$a^2D-z^4D^o$ †
6023.41	A	20?	0.00	2.05	1½–1½	(3)
4674.84	A	125	0.07	2.71	2½–3½	$a^2D-z^2F^o$
4643.69	A	150	0.00	2.66	1½–2½	(4)
4760.98	A	40	0.07	2.66	2½–2½	
4128.31	A	300	0.07	3.05	2½–2½	$a^2D-y^2D^o$
4142.86	A	200	0.00	2.98	1½–1½	(5)
4235.94	A	100	0.07	2.98	2½–1½	
4039.83	A	60	0.00	3.05	1½–2½	
4174.14	A	100	0.07	3.02	2½–1½	$a^2D-y^2P^o$
4047.64	A	80	0.00	3.05	1½– ½	(6)
4083.71	A	100	0.00	3.02	1½–1½	
4103.38	A	350	0.07	3.07	2½–3½	$a^2D-y^2F^o$
4077.38	A	300	0.00	3.03	1½–2½	(7)
4167.52	A	100	0.07	3.03	2½–2½	
3630.95	A	400	0.07	3.47	2½–1½	$a^2D-x^2P^o$
3593.92	A	200	0.00	3.43	1½– ½	(8)
3552.70	A	40	0.00	3.47	1½–1½	
3021.74	A	15	0.07	4.15	2½–3½	$a^2D-y^4D^o$
2996.94	A	20	0.00	4.13	1½–2½	(9)
3045.36	A	20	0.07	4.12	2½–2½	
3005.26	A	12	0.00	4.11	1½–1½	
2984.25	A	50	0.07	4.20	2½–3½	$a^2D-x^2F^o$
2974.59	A	35	0.00	4.15	1½–2½	(10)
3022.28	A	12	0.07	4.15	2½–2½	
2964.96	A	30	0.07	4.33	2½–2½	$a^2D-x^2D^o$ †
2995.26	A	10	0.07	4.19	2½–1½	(11)
*5466.46//	A	300	1.42	3.68	4½–5½	$a^4F-z^4G^o$ †
5527.54	A	250	1.39	3.63	3½–4½	(12)
5581.87	A	150	1.37	3.58	2½–3½	
5630.14	A	100	1.35	3.54	1½–2½	
4839.87	A	60	1.42	3.97	4½–4½	$a^4F-y^4F^o$
4845.67	A	50	1.39	3.94	3½–3½	(13)
4853.69	A	50	1.37	3.91	2½–2½	
4859.84	A	40	1.35	3.89	1½–1½	
4906.11	A	6	1.42	3.94	4½–3½	
4893.44	A	6	1.37	3.89	2½–1½	
4781.04	A	10	1.39	3.97	3½–4½	
4799.30	A	15	1.37	3.94	2½–3½	
4819.64	A	10	1.35	3.91	1½–2½	
4527.25	A	80	1.42	4.15	4½–3½	$a^4F-y^4D^o$ †
4527.80	A	50	1.39	4.12	3½–2½	(14)
4505.95	A	50	1.37	4.11	2½–1½	
4487.47	A	40	1.35	4.10	1½– ½	
4475.72	A	20	1.39	4.15	3½–3½	
4487.28	A	20	1.37	4.12	2½–2½	
4477.45	A	25	1.35	4.11	1½–1½	
4513.58	A	4	1.89	4.63	2½–2½	$a^2F-y^4P^o$
4581.32	A	6	1.89	4.59	2½–1½	(15)
6845.24	A	10	2.36	4.17	2½–3½	$z^4P^o-e^4D$†
6950.32	A	8	2.35	4.12	1½–2½	(16)

Strongest Unclassified Lines of **Y I**

3587.75	A	20	III
3424.16	A	7	IIIA
3278.43	A	5	IIIA
3091.70	A	15	III

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Y II I P 12.3 Anal A List A June 1942						
4204.69	A	10	0.00	2.94	0–1	$a^1S-z^3P^o$ (1)
3633.13	A	200	0.00	3.40	0–1	$a^1S-z^1P^o$ (2)
3496.08	A	80	0.00	3.53	0–1	$a^1S-z^3D^o$ (3)
3112.05	A	4	0.00	3.97	0–1	$a^1S-y^3P^o$ (4)
4309.62	A	50	0.18	3.04	3–2	$a^3D-z^3P^o$
4398.02	A	50	0.13	2.94	2–1	(5)
4422.59	A	40	0.10	2.89	1–0	
4235.73	A	20	0.13	3.04	2–2	
4358.73	A	30	0.10	2.94	1–1	
4199.27	A	5	0.10	3.04	1–2	
4047.88	P		0.18	3.23	3–2	$a^3D-z^1D^o$
3982.59	A	150	0.13	3.23	2–2	(6)
3950.35	A	200	0.10	3.23	1–2	
3710.30//	A	500	0.18	3.51	3–4	$a^3D-z^3F^o$
3774.33	A	300	0.13	3.40	2–3	(7)
3788.70	A	200	0.10	3.36	1–2	
3832.89	A	100	0.18	3.40	3–3	
3818.34	A	60	0.13	3.36	2–2	
3878.28	A	20	0.18	3.36	3–2	
3776.56	A	75	0.13	3.40	2–1	$a^3D-z^1P^o$
3747.55	A	40	0.10	3.40	1–1	(8)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
II continued						
3600.74	A	300	0.18	3.61	3-3	a^3D-z^3P^o
3611.06	A	200	0.13	3.55	2-2	(9)
3601.93	A	100	0.10	3.53	1-1	
3664.62	A	150	0.18	3.55	3-2	
3628.71	A	100	0.13	3.53	2-1	
3549.02	A	100	0.13	3.61	2-3	
3584.53	A	100	0.10	3.55	1-2	
3242.30	A	150	0.18	3.99	3-2	a^3D-y^3P^o
3216.70	A	100	0.13	3.97	2-1	(10)
3203.33	A	60	0.10	3.96	1-0	
3200.28	A	50	0.13	3.99	2-2	
3195.62	A	50	0.10	3.97	1-1	
3179.42	A	10	0.10	3.99	1-2	
3135.17	A	5	0.18	4.12	3-3	a^3D-z^1F^o
3095.88	A	5	0.13	4.12	2-3	(11)
4882.32	A	20	0.41	3.04	2-2	a^1D-z^3P^o
4881.44	A	2	0.41	2.94	2-1	(12)
4374.94	A	300	0.41	3.23	2-2	a^1D-z^1P^o
						(13)
4124.91	A	15	0.41	3.40	2-3	a^1D-z^3F^o
4177.54	A	125	0.41	3.36	2-2	(14)
4127.57	A	2	0.41	3.40	2-1	a^1D-z^1P^o
						(15)
3857.26	P		0.41	3.61	2-3	a^1D-z^3D^o
3930.66	A	15	0.41	3.55	2-2	(16)
3951.59	A	5	0.41	3.53	2-1	
3448.82	A	10	0.41	3.99	2-2	a^1D-y^3P^o
3467.88	A	5	0.41	3.97	2-1	(17)
3327.89	A	100	0.41	4.12	2-3	a^1D-z^1P^o
						(18)
5610.36	A	2	1.03	3.23	3-2	a^3F-z^1D^o
5509.91	A	30 l	0.99	3.23	2-2	(19)
5087.42	A	100 l	1.08	3.51	4-4	a^3F-z^3F^o
5205.73	A	80	1.03	3.40	3-3	(20)
5200.42	A	60	0.99	3.36	2-2	
5320.78	A	4 l	1.08	3.40	4-3	
5289.82	A	5 l	1.03	3.36	3-2	
4982.13	A	15 l	1.03	3.51	3-4	
5119.12	A	20 l	0.99	3.40	2-3	
5123.21	A	50 l	0.99	3.40	2-1	a^3F-z^1P^o
						(21)
4883.69	A	200	1.08	3.61	4-3	a^3F-z^3D^o
4900.13	A	150	1.03	3.55	3-2	(22)
4854.87	A	150	0.99	3.53	2-1	
4786.58	A	20	1.03	3.61	3-3	
4823.31	A	30	0.99	3.55	2-2	
4713.26	B	(1)	0.99	3.61	2-3	
4173.76	A	?	1.03	3.99	3-2	a^3F-y^3P^o
						(23)
4064.99	A	2	1.08	4.12	4-3	a^3F-z^1F^o
3997.43	A	1	1.03	4.12	3-3	(24)
3946.21	A	2	0.99	4.12	2-3	
7450.32	A	5	1.74	3.40	2-1	a^3P-z^1P^o
7406.23	A	2	1.73	3.40	1-1	(25)
7332.97	A	2	1.71	3.40	0-1	
6613.74	A	20	1.74	3.61	2-3	a^3P-z^3D^o
*6795.41	A	30	1.73	3.55	1-2	(26)
			1.71	3.53	0-1	
6832.49	A	4	1.74	3.55	2-2	
6858.25	A	5	1.73	3.53	1-1	
6896.00	A	10	1.74	3.53	2-1	
5497.42	A	50	1.74	3.99	2-2	a^3P-y^3P^o
*5531.56 §	P	20	1.73	3.97	1-1	(27)
5546.02	A	10 l	1.74	3.97	2-1	
*5544.61 §	A	10 l	1.73	3.96	1-0	
5473.40	A	20 l	1.73	3.99	1-2	
5480.75	A	15 l	1.71	3.97	0-1	
5196.43	A	10 l	1.74	4.12	2-3	a^3P-z^1F^o
						(28)
3280.91	A	? Ag	1.74	5.50	2-1	a^3P-y^1P^o
						(29)
8835.85	A	?	1.83	3.23	2-2	b^1D-z^1D^o
						(30)
8066.20	A	?	1.83	3.36	2-2	b^1D-z^3F^o
						(31)
7881.90	A	10	1.83	3.40	2-1	b^1D-z^1P^o
						(32)
6951.68	A	3	1.83	3.61	2-3	b^1D-z^3D^o
7193.74	A	1	1.83	3.55	2-2	(33)
7264.19	A	10	1.83	3.53	2-1	
5728.91	A	10 l	1.83	3.99	2-2	b^1D-y^3P^o
5781.69	A	5 l	1.83	3.97	2-1	(34)
5402.78	A	50 l	1.83	4.12	2-3	b^1D-z^1F^o
						(35)
3362.00	A	30nl	1.83	5.50	2-1	b^1D-y^1P^o
						(36)
7388.46	A	1	1.94	3.61	4-3	a^1G-z^3D^o
						(37)
5662.95	A	200	1.94	4.12	4-3	a^1G-z^1F^o
						(38)
3225.17	A	5nl	3.04	6.87	2-3	z^3P^o-e^3D
3198.42	C	2n	2.94	6.79	1-2	(39)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Y II continued						
3461.0	A	20nl	3.23	6.79	2-2	z^1D^o-e^3D
3470.18	C	5nl	3.23	6.78	2-1	(40)
3380.114	C	5nl	3.23	6.88	2-2	z^1D^o-e^1D
						(41)
3086.858	C	30nl	3.23	7.23	2-3	z^1D^o-e^1F
						(42)
3069.26	A	5n	3.23	7.25	2-1	z^1D^o-f^3D
						(43)
3026.47	C	10nl	3.23	7.31	2-3	z^1D^o-e^3G
						(44)
2978.18	A	3n	3.23	7.37	2-1	z^1D^o-e^1P
						(45)
3668.489	C	50nl	3.51	6.87	4-3	z^3F^o-e^3D
3635.334	C	20nl	3.40	6.79	3-2	(46)
3605.46	C	10nl	3.36	6.78	2-1	
3556.083	C	5nl	3.40	6.87	3-3	
3507.964	C	8nl	3.36	6.88	2-2	z^3F^o-e^1D
						(47)
3193.48	A	2nl	3.36	7.23	2-3	z^3F^o-e^1F
						(48)
3232.00	A	3n	3.51	7.32	4-3	z^3F^o-f^3D
3182.42	A	3nl	3.40	7.28	3-2	(49)
3144.37	A	2n	3.40	7.32	3-3	
*3114.45	A	10n	3.36	7.32	2-3?	
*3110.65	A	2n	3.40	7.37	3-2?	z^3F^o-e^3P
3081.600	C	2n	3.36	7.37	2-2	(50)
3173.07	A	100nl	3.51	7.39	4-5	z^3F^o-e^3G
3129.933	C	40nl	3.40	7.34	3-4	(51)
3128.789	C	20nl	3.36	7.31	2-3	
3077.14	A	4n	3.36	7.37	2-1	z^3F^o-e^1P
						(52)
3001.42	A	2	3.36	7.47	2-2	z^3F^o-f^1D
						(53)
2980.69	C	20nl	3.51	7.65	4-4	z^3F^o-e^3F †
3006.0	A	2nl	3.51	7.61	4-3	(54)
3643.4	A	3nl	3.40	6.78	1-1	z^1P^o-e^3D
						(55)
3544.001	C	3nl	3.40	6.88	1-2	z^1P^o-e^1D
						(56)
3109.3	A	1	3.40	7.37	1-2	z^1P^o-e^3P
3160.60	A	1n	3.40	7.30	1-1	(57)
*3114.45	A	10n	3.40	7.36	1-0?	z^1P^o-e^1S
						(58)
3104.82	A	4n	3.40	7.37	1-1	z^1P^o-e^1P
						(59)
3027.75	A	3	3.40	7.47	1-2	z^1P^o-f^1D
						(60)
3782.302	C	50nl	3.61	6.87	3-3	z^3D^o-e^3D
3800.883	C	15nl	3.55	6.79	2-2	(61)
3792.56	C	10nl	3.53	6.78	1-1	
3873.308	C	5nl	3.61	6.79	3-2	
3812.18	C	5nl	3.55	6.78	2-1	
3714.3	A	5nl	3.55	6.87	2-3	
3703.323	C	5nl	3.55	6.88	2-2	z^3D^o-e^1D
3684.903	C	5nl	3.53	6.88	1-2	(62)
3409.87	C	4nl	3.61	7.23	3-3	z^3D^o-e^1F
						(63)
3319.78	C	15nl	3.61	7.32	3-3	z^3D^o-f^3D
3308.4	A	20nl	3.55	7.28	2-2	(64)
3318.6	A	4nl	3.53	7.25	1-1	
3333.606	C	2n	3.55	7.25	2-1	
3293.9	A	3n	3.53	7.28	1-2?	
3282.51	A	2	3.61	7.37	3-2	z^3D^o-e^3P
3286.71	A	3n	3.55	7.30	2-1	(65)
3313.39	C	4nl	3.53	7.26	1-0	
3231.20	A	2n	3.55	7.37	2-2	
3304.01	C	2n	3.61	7.34	3-4	z^3D^o-e^3G
3336.25	C	4nl	3.61	7.31	3-3	(66)
3213.40	A	5nl	3.53	7.37	1-1	z^3D^o-e^1P
						(67)
3055.3	A	50nl	3.61	7.65	3-4	z^3D^o-e^3F
3036.59	C	25nl	3.55	7.61	2-3	(68)
3053.27	C	15nl	3.53	7.57	1-2	
3082.16	A	3n	3.61	7.61	3-3	
3066.02	A	4n	3.55	7.57	2-2	
3050.5	A	1n	3.53	7.58	1-0	z^3D^o-f^1S
						(69)
4279.3	A	5nl	3.99	6.87	2-3	y^3P^o-e^3D
4364.01	A	?	3.97	6.79	1-2	(70)
4364.17	A	?	3.96	6.78	0-1	
4264.88	A	1n	3.99	6.88	2-2	y^3P^o-e^1D
						(71)
3848.194	C	8nl	3.99	7.19	2-1	y^3P^o-e^3S
3824.78	C	5nl	3.97	7.19	1-1	(72)
3813.8	A	2nl	3.96	7.19	0-1	
3808.7	A	1n	3.99	7.23	2-3	y^3P^o-e^1F
						(73)
3696.6	A	25nl	3.99	7.32	2-3	y^3P^o-f^3D
3727.09	C	20nl	3.97	7.28	1-2	(74)
3758.9	A	3nl	3.97	7.25	1-1	
3650.45	A	2n	3.99	7.37	2-2	y^3P^o-e^3P
*3731.398§	C	4	3.99	7.30	2-1	(75)
3689.2	A	2n	3.96	7.30	0-1	
3716.91	C	7nl	3.99	7.31	2-3	y^3P^o-e^3G
						(76)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Y II continued						
3457.088	C	4nl	3.99	7.56	2-1	y^3P^o-f^3S
3429.42	C	3n	3.96	7.56	0-1	(77)
3093.76	A	10n	3.99	7.97	2-2	y^3P^o-f^3P
*3110.65	A	2n	3.97	7.93	1-1	(78)
*3126.16	A	4n	3.99	7.93	2-1	
			3.97	7.91	1-0	
3078.64	A	4n	3.97	7.97	1-2	
3103.3	A	2n	3.96	7.93	0-1	
3030.214	C	4n	3.99	8.06	2-3	y^3P^o-g^3D
3023.50	A	2n	3.97	8.05	1-2	(79)
4607.94	A	—	4.12	6.79	3-2?	z^1F^o-e^3D
						(80)
4465.4	A	10nl	4.12	6.88	3-2	z^1F^o-e^1D
						(81)
3967.69	C	15nl	4.12	7.23	3-3	z^1F^o-e^1F
						(82)
3846.516	C	3n	4.12	7.32	3-3	z^1F^o-f^3D
						(83)
3675.64	C	5nl	4.12	7.47	3-2	z^1F^o-f^1D
						(34)
3330.880	C	20nl	4.12	7.82	3-4	z^1F^o-e^1G
						(85)
3896.804	C	10nl	5.50	8.67	1-2	y^1P^o-h^1D
						(86)

Strongest Unclassified Lines of Y II

8429.36	A	10n
4734.52	A	5n
3407.7	A	3n

Zr I I P 6.92 Anal A List C June 1942

6832.93	A	12	0.07	1.88	3-3	a^3F-z^5G^o †
6762.38	A	30	0.00	1.83	2-2	(1)
6127.49	A	200	0.15	2.17	4-4	a^3F-z^3F^o
6143.23	A	150	0.07	2.08	3-3	(2)
6134.58	A	125	0.00	2.01	2-2	
6407.03	A	4	0.15	2.08	4-3	
6357.10	P		0.07	2.01	3-2	
5885.61	A	8	0.07	2.17	3-4	
5935.23	A	10	0.00	2.08	2-3	
6062.88	A	12	0.07	2.11	3-2	a^3F-z^5F^o †
5955.37	A	12	0.00	2.07	2-1	(3)
5879.79	A	40	0.15	2.25	4-3	a^3F-z^3D^o †
5797.76	A	25	0.07	2.20	3-2	(4)
5735.70	A	20	0.00	2.15	2-1	
4688.45	A	40	0.15	2.79	4-5	a^3F-z^3G^o †
4633.99	A	50	0.07	2.73	3-4	(5)
4575.52	A	40	0.00	2.70	2-3	
3916.64	A	10	0.15	3.30	4-5	a^3F-y^5G^o
3879.04	A	10	0.07	3.25	3-4	(6)
3849.26	A	30	0.00	3.21	2-3	
3900.51	A	(10)	0.00	3.16	2-2	
3989.29	A	7	0.07	3.16	3-2	
3968.25	A	80	0.15	3.26	4-5	a^3F-y^3G^o †
*3929.53§	A	150	0.07	3.21	3-4	(7)
3885.41	A	100	0.00	3.18	2-3	
3890.32	A	125	0.15	3.33	4-4	a^3F-x^3F^o
3863.88	A	100	0.07	3.26	3-3	(8)
3835.96	A	100	0.00	3.22	2-2	
3966.65	A	50	0.15	3.26	4-3	
3921.80	A	100	0.07	3.22	3-2	
3791.39	A	80	0.07	3.33	3-4	
3780.53	A	100	0.00	3.26	2-3	
3896.53	A	10	0.07	3.24	3-3	a^3F-x^1F^o †
						(9)
3864.33	A	40	0.15	3.35	4-3	a^3F-x^3D^o
3847.01	A	30	0.07	3.28	3-2	(10)
3822.41	A	40	0.00	3.23	2-1	
3766.71	A	60	0.07	3.35	3-3	
3764.38	A	80	0.00	3.28	2-2	
3891.39	A	100	0.15	3.32	4-4	a^3F-z^1G^o †
						(11)
3663.64	A	300	0.15	3.52	4-4	a^3F-w^3F^o
3623.87	A	300	0.07	3.48	3-3	(12)
3586.28	A	100	0.00	3.44	2-2	
3714.13	A	30	0.15	3.48	4-3	
3661.20	A	30	0.07	3.44	3-2	
3575.79	A	100	0.07	3.52	3-4	
3550.46	A	30	0.00	3.48	2-3	
3601.18	A	400	0.15	3.58	4-5	a^3F-x^3G^o †
3547.69	A	100	0.07	3.55	3-4	(13)
3519.60	A	125	0.00	3.51	2-3	
3533.22	A	60	0.15	3.65	4-5	a^3F-y^5F^o †
3501.33	A	15	0.07	3.60	3-4	(14)
3566.10	A	100	0.15	3.61	4-3	a^3F-y^3D^o †
3509.32	A	100	0.07	3.59	3-2	(15)
*3471.48 §	A	100	0.00	3.56	2-1	
3447.36	A	100	0.00	3.58	2-1	a^3F-z^1P^o
						(16)
3430.29	A	8	0.15	3.75	4-4	a^3F-x^5D^o †
3465.63	A	10	0.15	3.71	4-3	(17)
*3414.66 §	A	20	0.07	3.68	3-2	
3368.63	A	5	0.00	3.66	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Zr I continued						
3353.65	A	20	0.15	3.83	4-4	a^3F-y^1G° (18)
3234.13	A	100	0.15	3.97	4-5	a^3F-w^3G°
3212.02	A	100	0.07	3.91	3-4	(19)
3191.23	A	100	0.00	3.87	2-3	
3282.73	A	15	0.15	3.91	4-4	
*3250.42§	A	35	0.07	3.87	3-3	
3085.34	A	12	0.07	4.07	3-2	a^3F-v^3F° (20)
3014.44	A	15	0.00	4.09	2-2	a^3F-u^3F° † (21)
3029.52	A	300	0.15	4.23	4-3	a^3F-u^3D° †
3011.73	A	250	0.07	4.17	3-2	(22)
2985.36	A	200	0.00	4.13	2-1	
7111.71	A	20	0.52	2.25	2-3	a^3P-z^3D° †
7439.89	A	10	0.54	2.20	1-2	(23)
7554.73	A	5	0.52	2.15	0-1	
7336.03	A	4	0.52	2.20	2-2	
6140.50	A	15	0.52	2.53	2-2	a^3P-z^3P°
6192.96	A	5	0.54	2.53	1-1	(24)
6120.86	A	(5)	0.52	2.53	2-1	
*6304.35	A	(3)	0.54	2.50	1-0	
6213.06	A	8	0.54	2.53	1-2	
6134.86	A	5	0.52	2.53	0-1	
5620.16	A	15	0.52	2.71	2-1	a^3P-z^3S° †
*5680.93	A	15	0.54	2.71	1-1	(25)
5385.14	A	40	0.52	2.81	2-2	a^3P-y^1D° (26)
5133.42	A	6	0.52	2.92	2-3	a^3P-y^3D° †
5277.40	A	8	0.54	2.88	1-2	(27)
5311.42	A	6	0.52	2.84	0-1	
5234.94	A	6	0.52	2.88	2-2	
5362.56	A	6	0.54	2.84	1-1	
4948.77	A	2	0.52	3.01	2-3	a^3P-y^1F° (28)
4604.42	A	8	0.52	3.20	2-3	a^3P-z^5P° † (29)
4535.75	A	30	0.52	3.24	2-3	a^3P-x^1F° (30)
4360.80	A	15	0.52	3.35	2-3	a^3P-x^3D° †
4507.11	A	30	0.54	3.28	1-2	(31)
4553.01	A	12	0.52	3.23	0-1	
4043.57	A	30	0.52	3.57	2-2	a^3P-x^3P° †
4108.39	A	15	0.54	3.54	1-1	(32)
4121.45	A	30	0.54	3.53	1-0	
3613.70	A	15	0.52	3.93	2-1	a^3P-y^3S° † (33)
3269.66	A	40	0.52	4.29	2-2	a^3P-y^5P° † (34)
3260.11	A	40	0.52	4.30	2-2	a^3P-w^1D° † (35)
3045.82	A	10	0.52	4.57	2-2	a^3P-v^3P°
3094.79	A	15	0.52	4.50	2-1	(36)
*3157.82	A	50	0.54	4.45	1-0	
*3063.58§	A	8	0.54	4.57	1-2	
3095.82	A	12	0.52	4.50	0-1	
3120.74	A	125	0.52	4.47	2-3	a^3P-t^3D°
3132.06	A	50	0.54	4.48	1-2	(37)
3131.11	A	25	0.52	4.46	0-1	
3113.50	A	8	0.52	4.48	2-2	
3148.81	A	25	0.54	4.46	1-1	
3130.05	A	8	0.52	4.46	2-1	
3005.36	A	40	0.52	4.62	2-2	a^3P-u^3P° †
3108.36	A	10	0.54	4.51	1-0	(38)
9015.16	B	20	0.73	2.10	5-6	a^5F-z^5G° †
9276.89	B	25	0.68	2.01	4-5	(39)
9547.26	B	25	0.65	1.94	3-4	
9822.30	B	20	0.62	1.88	2-3	
10084.70	B	12	0.60	1.83	1-2	
8070.12	A	(25)	0.73	2.26	5-5	a^5F-z^5F° (40)
8133.00	A	(20)	0.68	2.20	4-4	
8212.59	A	(18)	0.65	2.15	3-3	
8305.94	A	(15)	0.62	2.11	2-2	
8389.42	A	(8)	0.60	2.07	1-1	
8370.21	A	(10)	0.73	2.20	5-4	
8414.00	A	(7)	0.68	2.15	4-3	
8464.65	A	(10)	0.65	2.11	3-2	
8498.44	A	(10)	0.62	2.07	2-1	
7849.38	A	(15)	0.68	2.26	4-5	
7944.65	A	(15)	0.65	2.20	3-4	
8063.10	A	(10)	0.62	2.15	2-3	
8201.73	A	(10)	0.60	2.11	1-2	
7870.00	A	(12)	0.68	2.25	4-3	a^5F-z^3D° †
7956.69	A	(7)	0.65	2.20	3-2	(41)
8058.14	A	(7)	0.62	2.15	2-1	
7169.14	A	150	0.73	2.45	5-4	a^5F-z^5D° †
7097.78	A	150	0.68	2.42	4-3	(42)
7102.95	A	80	0.65	2.39	3-2	
7103.77	A	40	0.62	2.36	2-1	
7087.35	A	20	0.60	2.34	1-0	
4687.80 //	A	150	0.73	3.36	5-6	a^5F-y^5G°
4710.08	A	100	0.68	3.30	4-5	(43)
4739.48	A	100	0.65	3.25	3-4	
4772.32	A	80	0.62	3.21	2-3	
4815.62	A	60	0.60	3.16	1-2	
4788.69	A	8	0.73	3.30	5-5	
4805.88	A	15	0.68	3.25	4-4	
4824.29	A	12	0.65	3.21	3-3	
4851.36	A	12	0.62	3.16	2-2	
4887.72	A	(2)	0.73	3.25	5-4	
*4893.12	A	2	0.68	3.21	4-3	
4905.09	A	(4)	0.65	3.16	3-2	
4866.07	A	5	0.73	3.26	5-5	a^5F-y^3G° †
4883.61	A	5	0.68	3.21	4-4	(44)
4881.25	A	4	0.65	3.18	3-3	
4784.94	A	12	0.68	3.26	4-5	
4815.05	A	12	0.65	3.21	3-4	
4828.05	A	10	0.62	3.18	2-3	
4227.76	A	200	0.73	3.65	5-5	a^5F-y^5F°
4239.31	A	150	0.68	3.60	4-4	(45)
4241.68	A	80	0.65	3.56	3-3	
4241.20	A	50	0.62	3.53	2-2	
4240.35	A	50	0.60	3.51	1-1	
4302.88	A	15	0.73	3.60	5-4	
4294.78	A	20	0.68	3.56	4-3	
*4282.20 §	A	20	0.65	3.53	3-2	
4268.01	A	20	0.62	3.51	2-1	
4166.37	A	20	0.68	3.65	4-5	
4187.56	A	20	0.65	3.60	3-4	
4201.45	A	20	0.62	3.56	2-3	
4213.86	A	15	0.60	3.53	1-2	
4081.22	A	100	0.73	3.75	5-4	a^5F-x^5D°
4073.71	A	100	0.68	3.71	4-3	(46)
4064.16	A	100	0.65	3.68	3-2	
4055.03	A	60	0.62	3.66	2-1	
4044.57	A	25	0.60	3.65	1-0	
4023.99	A	30	0.68	3.75	4-4	
4034.92	A	40	0.65	3.71	3-3	
4027.20	A	40	0.62	3.68	2-2	
4030.03	A	30	0.60	3.66	1-1	
3977.32	A	3	0.65	3.75	3-4	
*3988.68	A	10	0.62	3.71	2-3	
4002.55	A	8	0.60	3.68	1-2	
5664.55	A	25	0.63	2.81	2-2	a^1D-y^1D° (47)
4732.34	A	15	0.63	3.24	2-3	a^1D-x^1F° (48)
4542.22	A	20	0.63	3.35	2-3	a^1D-x^3D° † (49)
4135.68	A	10	0.63	3.61	2-3	a^1D-v^3D° † (50)
4183.31	A	10	0.63	3.58	2-1	a^1D-z^1P° (51)
3530.22	A	15	0.63	4.13	2-3	a^1D-u^3F° † (52)
3360.45	A	25	0.63	4.30	2-2	a^1D-w^1D° (53)
3090.44	A	6	0.63	4.62	2-2	a^1D-u^3P°
3136.95	A	30	0.63	4.56	2-1	(54)
*3157.82	A	50	0.63	4.54	2-3	a^1D-w^1F° (55)
3139.79	A	20	0.63	4.56	2-3	a^1D-v^3G° (56)
6445.76	A	10	0.99	2.91	4-3	a^1G-y^3F° (57)
3877.60	A	40	0.99	4.18	4-5	a^1G-z^1H° (58)
3535.16	A	20	0.99	4.49	4-4	a^1G-x^1G° (59)
3005.50	A	60	0.99	5.10	4-4	a^1G-w^1G° (60)
4341.13	A	20	1.39	4.33	3-4	a^5P-w^5D° †
4366.45	A	15	1.36	4.19	2-3	(61)
4394.94	A	8	1.34	4.15	1-2	
4413.04	A	12	1.39	4.19	3-3	
4420.45	A	12	1.36	4.15	2-2	
4431.48	A	10	1.34	4.13	1-1	
5046.61	A	10	1.52	3.97	4-5	b^3F-w^3G° †
5064.92	A	15	1.48	3.91	3-4	(62)
5078.28	A	20	1.44	3.87	2-3	
4683.43	A	15	1.52	4.16	4-4	b^3F-v^3F° †
4707.78	A	4	1.48	4.10	3-3	(63)
4711.91	A	8	1.52	4.14	4-4	b^3F-u^3F° †
4657.64	A	7	1.48	4.13	3-3	(64)
*4644.82	A	8	1.44	4.09	2-2	
6313.05	A	50	1.58	3.53	5-6	a^3G-z^3H° †
6470.25	A	15	1.58	3.48	4-5	(65)
6489.68	A	25	1.54	3.45	3-4	
4753.06	A	3	1.87	4.46	6-7	a^3H-z^3I°
4719.12	A	10	1.85	4.47	5-6	(66)
4762.78	A	8	1.83	4.42	4-5	

Zr II I P 13.97 Anal A List A July 1942

3391.96 //	A	100	0.16	3.80	4½-5½	a^4F-z^4G°
3438.23	A	100	0.09	3.68	3½-4½	(1)
3496.18	A	50	0.04	3.57	2½-3½	
3572.47	A	30	0.00	3.45	1½-2½	
3505.67	A	12	0.16	3.68	4½-4½	
3551.94	A	18	0.09	3.57	3½-3½	
3613.08	A	12	0.04	3.45	2½-2½	
3672.65	A	2	0.09	3.45	3½-2½	
3419.10	A	5	0.16	3.77	4½-3½	a^4F-z^2F°
3478.29	A	4	0.09	3.64	3½-2½	(2)
3424.82	A	7	0.04	3.64	2½-2½	
3305.15	A	15	0.04	3.77	2½-3½	
3388.29	A	15	0.00	3.64	1½-2½	
3273.04	A	75	0.16	3.93	4½-4½	a^4F-z^4F°
3279.26	A	65	0.09	3.86	3½-3½	(3)
3306.27	A	25	0.04	3.77	2½-2½	
3357.26	A	15	0.00	3.68	1½-1½	
3340.55	A	15	0.16	3.86	4½-3½	a^4F-z^4F°
3356.08	A	18	0.09	3.77	3½-2½	cont
3393.12	A	10	0.04	3.68	2½-1½	
3214.19	A	40	0.09	3.93	3½-4½	
3231.69	A	30	0.04	3.86	2½-3½	
3272.31	A	8	0.00	3.77	1½-2½	
*3288.81	A	10	0.09	3.85	3½-2½	a^4F-z^2D°
3319.03	A	8	0.04	3.76	2½-1½	(4)
3241.01	A	25	0.04	3.85	2½-2½	
3284.72	A	20	0.00	3.76	1½-1½	
3208.32	A	4	0.00	3.85	1½-2½	
3165.98	A	10	0.16	4.06	4½-3½	a^4F-z^4D°
3138.66	A	25	0.09	4.03	3½-2½	(5)
3139.76	A	12	0.04	3.98	2½-1½	
3125.92	A	12	0.00	3.95	1½- ½	
3110.87	A	8	0.09	4.06	3½-3½	
3095.07	A	12	0.04	4.03	2½-2½	
3099.22	A	10	0.00	3.98	1½-1½	
3068.02	A	2	0.04	4.06	2½-3½	
3065.20	A	2	0.00	4.03	1½-2½	
3061.33	A	3	0.09	4.13	3½-2½	a^4F-y^2D°
3060.11	A	3	0.04	4.07	2½-1½	(6)
3019.84	A	3	0.04	4.13	2½-2½	
3030.91	A	10	0.00	4.07	1½-1½	
2991.40	A	5	0.00	4.13	1½-2½	
3697.49	A	20	0.46	3.80	4½-5½	b^4F-z^4G°
3766.83	A	25	0.41	3.68	3½-4½	(7)
3843.03	A	30	0.36	3.57	2½-3½	
3934.14	A	30	0.32	3.45	1½-2½	
3832.94	A	1	0.46	3.68	4½-4½	
3903.77	A	1	0.41	3.57	3½-3½	
3984.76	A	4	0.36	3.45	2½-2½	
3729.74	A	5	0.46	3.77	4½-3½	b^4F-z^2F°
3814.97	A	2	0.41	3.64	3½-2½	(8)
3667.06	A	3	0.41	3.77	3½-3½	
3756.96	A	1	0.36	3.64	2½-2½	
*3613.43	A	2	0.36	3.77	2½-3½	
3711.95	A	1	0.32	3.64	1½-2½	
3556.61	A	30	0.46	3.93	4½-4½	b^4F-z^4F°
3576.88	A	20	0.41	3.86	3½-3½	(9)
3614.79	A	18	0.36	3.77	2½-2½	
3674.74	A	40	0.32	3.68	1½-1½	
3636.46	A	8	0.46	3.86	4½-3½	
3668.46	A	8	0.41	3.77	3½-2½	
3718.86	A	6	0.36	3.68	2½-1½	
3499.58	A	8	0.41	3.93	3½-4½	
3525.81	A	8	0.36	3.86	2½-3½	
3573.09	A	8	0.32	3.77	1½-2½	
3588.32	A	6	0.41	3.85	3½-2½	b^4F-z^2D°
3630.03	A	10	0.36	3.76	2½-1½	(10)
3536.94	A	5	0.36	3.85	2½-2½	
3587.98	A	7	0.32	3.76	1½-1½	
3497.00	A	2	0.32	3.85	1½-2½	
3430.53	A	30	0.46	4.06	4½-3½	b^4F-z^4D°
3410.26	A	20	0.41	4.03	3½-2½	(11)
3404.84	A	12	0.36	3.98	2½-1½	
3399.36	A	10	0.32	3.95	1½- ½	
3377.45	A	6	0.41	4.06	3½-3½	
3363.81	A	5	0.36	4.03	2½-2½	
3367.81	A	5	0.32	3.98	1½-1½	
3331.90	A	2	0.36	4.06	2½-3½	
3327.67	A	2	0.32	4.03	1½-2½	
3375.15	A	2	0.36	4.13	2½-2½	b^4F-y^3D°
3287.31	A	3	0.32	4.07	1½-1½	(12)
3240.85	P		0.32	4.13	1½-2½	
2998.34	A	1	0.32	4.43	1½-1½	b^4F-z^2P° (13)
2968.95	A	12	0.46	4.62	4½-3½	b^4F-y^4F° †
2978.07	A	12	0.41	4.55	3½-2½	(14)
2979.18	A	12	0.36	4.50	2½-1½	
4096.63	A	4	0.56	3.57	2½-3½	a^2D-z^4G°
4211.88	A	12	0.52	3.45	1½-2½	(15)
4258.05	A	12	0.56	3.45	2½-2½	
3836.76	A	60	0.56	3.77	2½-3½	a^2D-z^2F°
3958.24	A	50	0.52	3.64	1½-2½	(16)
3998.98	A	30	0.56	3.64	2½-2½	
3738.13	A	5	0.56	3.86	2½-3½	a^2D-z^4F°
3800.73	A	5	0.52	3.77	1½-2½	(17)
3838.28	A	5	0.56	3.77	2½-2½	
3915.94	A	25	0.52	3.68	1½-1½	
3955.82	P		0.56	3.68	2½-1½	
3750.65	A	6	0.56	3.85	2½-2½	a^2D-z^2D°
3817.59	A	12	0.52	3.76	1½-1½	(18)
3855.43	A	3	0.56	3.76	2½-1½	
3714.77	A	15	0.52	3.85	1½-2½	
3520.87	A	5	0.56	4.06	2½-3½	a^2D-z^4D°
m3556.54	P	Zr+	0.56	4.03	2½-2½	(19)
3457.56	A	12	0.56	4.13	2½-2½	a^2D-y^2D°
3479.02	A	5	0.52	4.07	1½-1½	(20)
3510.46	A	7	0.56	4.07	2½-1½	
3334.62	A	9	0.56	4.26	2½-3½	a^2D-z^2G° (21)
3271.13	A	7	0.52	4.30	1½- ½	a^2D-z^2S° (22)
3182.86	A	35	0.56	4.43	2½-1½	a^2D-z^2P°
3129.16	A	10	0.52	4.47	1½- ½	(23)
3157.00	A	10	0.52	4.43	1½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Zr II continued						
2981.02	A	12	0.56	4.70	2½-3½	a^3D-y^4D^o
3036.50	A	7	0.52	4.59	1½-2½	(24)
3086.44	A	2	0.52	4.52	1½-1½	
3111.15	A	2	0.56	4.52	2½-1½	
3125.21	A	4	0.52	4.47	1½- ½	
3036.39	A	15	0.56	4.62	2½-3½	a^3D-y^4F^o
3064.64	A	3	0.52	4.55	1½-2½	(25)
3089.00	A	1	0.56	4.55	2½-2½	
3003.73	A	15	0.56	4.66	2½-3½	a^3D-y^3F^o
3020.45	A	5	0.52	4.61	1½-2½	(26)
3044.12	A	4	0.56	4.61	2½-3½	
3013.32	A	8	0.56	4.65	2½-1½	a^3D-z^4S^o
2990.10	A	3	0.52	4.65	1½-1½	(27)
4373.52	A	4	0.75	3.64	1½-2½	a^3P-z^3F^o (28)
4090.52	A	10	0.75	3.77	1½-2½	a^3P-z^4F^o
4156.24	A	15	0.71	3.68	½-1½	(29)
4234.27	A	3	0.75	3.68	1½-1½	
3991.14	A	40	0.75	3.85	1½-2½	a^3P-z^2D^o
4045.63	A	15	0.71	3.76	½-1½	(30)
4110.05	A	3	0.75	3.76	1½-1½	
3772.06	A	4	0.75	4.03	1½-2½	a^3P-z^4D^o
3767.89	A	5	0.71	3.98	½-1½	(31)
3823.72	A	1	0.75	3.98	1½-1½	
3807.41	A	2	0.71	3.95	½- ½	
3660.92	A	3	0.75	4.13	1½-2½	a^3P-y^2D^o
3667.40	A	1	0.71	4.07	½-1½	(32)
3720.29	P		0.75	4.07	1½-1½	
3483.54	A	12	0.75	4.30	1½- ½	a^3P-z^3S^o
3437.16	A	10	0.71	4.30	½- ½	(33)
3354.39	A	7	0.75	4.43	1½-1½	a^3P-z^2P^o
3280.75	A	3	0.71	4.47	½- ½	(34)
3322.99	A	10	0.75	4.47	1½- ½	
3311.34	A	4	0.71	4.43	½-1½	
3218.68	A	1	0.75	4.59	1½-2½	a^3P-y^4D^o
3318.52	A	7	0.75	4.47	1½- ½	(35)
3276.37	A	1	0.71	4.47	½- ½	
3295.03	A	1	0.75	4.50	1½-1½	a^3P-y^4F^o (36)
3200.67	A	2	0.75	4.61	1½-2½	a^3P-y^3F^o (37)
3088.28	A	1	0.75	4.75	1½-2½	a^3P-z^4P^o
3128.79	A	1	0.75	4.70	1½- ½	(38)
3091.30	A	1	0.71	4.70	½- ½	
3021.97	A	1	0.75	4.84	1½-1½	a^3P-x^4D^o
3010.28	A	2w1	0.71	4.81	½- ½	(39)
4377.37	A	4	0.80	3.68	3½-4½	a^3F-z^4G^o
4317.32	A	12	0.71	3.57	2½-3½	(40)
4454.80	A	10	0.80	3.57	3½-3½	
4496.96	A	15	0.71	3.45	2½-2½	
4149.22	A	75	0.80	3.77	3½-3½	a^3F-z^2F^o
4208.99	A	30	0.71	3.64	2½-2½	(41)
4339.56	A	3	0.80	3.64	3½-2½	
4029.68	A	20	0.71	3.77	2½-3½	
3936.07	A	7	0.80	3.93	3½-4½	a^3F-z^4F^o
3921.02	P		0.71	3.86	2½-3½	(42)
4034.10	A	5	0.80	3.86	3½-3½	
4031.35	A	2	0.71	3.77	2½-2½	
4150.97	A	10	0.80	3.77	3½-2½	
4161.20	A	20	0.71	3.68	2½-1½	
4048.68	A	25	0.80	3.85	3½-2½	a^3F-z^2D^o
4050.32	A	15	0.71	3.76	2½-1½	(43)
3934.80	A	20	0.71	3.85	2½-2½	
3782.24	A	4	0.80	4.06	3½-3½	a^3F-z^4D^o
3721.69	A	2	0.71	4.03	2½-2½	(44)
3823.41	A	3	0.80	4.03	3½-2½	
3771.98	A	2	0.71	3.98	2½-1½	
3682.67	A	2	0.71	4.06	2½-3½	
3709.27	A	60	0.80	4.13	3½-2½	a^3F-y^2D^o
3671.28	A	20	0.71	4.07	2½-1½	(45)
•3613.43	A	2	0.71	4.13	2½-2½	
3481.14	A	35	0.80	4.34	3½-4½	a^3F-z^3G^o
3479.39	A	30	0.71	4.26	2½-3½	(46)
3568.14	A	4	0.80	4.26	3½-3½	
3314.49	A	10	0.71	4.43	2½-1½	a^3F-z^3P^o (47)
3166.29	A	8	0.80	4.70	3½-3½	a^3F-y^4D^o
3181.94	A	7	0.71	4.59	2½-2½	(48)
3228.81	A	15	0.80	4.62	3½-3½	a^3F-y^4F^o
3212.85	A	6	0.71	4.55	2½-2½	(49)
3256.53	A	1	0.71	4.50	2½-1½	
3155.95	A	1	0.71	4.62	2½-3½	
3191.93	A	12	0.80	4.66	3½-3½	a^3F-y^3F^o
3164.32	A	20	0.71	4.61	2½-2½	(50)
3237.54	A	1	0.80	4.61	3½-2½	
m3120.72	P	Zr	0.71	4.66	2½-3½	
3122.61	A	1	0.80	4.75	3½-2½	a^3F-z^4P^o
3054.39	A	3	0.71	4.75	2½-2½	(51)
3013.86	A	0	0.80	4.89	3½-2½	a^3F-x^4D^o (52)
4442.50	A	2	0.99	3.77	2½-3½	a^4P-z^3F^o (53)
4024.45	A	12	0.99	4.06	2½-3½	a^4P-z^4D^o
4018.38	A	10	0.96	4.03	1½-2½	(54)
4040.24	A	4	0.93	3.98	½-1½	
4071.09	A	4	0.99	4.03	2½-2½	
4077.05	A	3	0.96	3.98	1½-1½	
4085.68	A	5	0.93	3.95	½- ½	
4131.31	A	1	0.99	3.98	2½-1½	
4123.38	A	1	0.96	3.95	1½- ½	
3941.92	A	3	0.99	4.13	2½-2½	a^4P-y^3D^o (55)
3692.60	A	1	0.96	4.30	1½- ½	a^4P-z^3S^o (56)
3588.80	A	2	0.99	4.43	2½-1½	a^4P-z^2P^o
3512.67	A	3	0.96	4.47	1½- ½	(57)
3485.31	A	5	0.93	4.47	½- ½	
3334.25	A	10	0.99	4.70	2½-3½	a^4P-y^4D^o
3396.34	A	7	0.96	4.59	1½-2½	(58)
3432.41	A	7	0.93	4.52	½-1½	
3433.90	A	8	0.99	4.59	2½-2½	
3458.93	A	10	0.96	4.52	1½-1½	
3480.40	A	5	0.93	4.47	½- ½	
•3497.90	A	12	0.99	4.52	2½-1½	
3507.66	A	4	0.96	4.47	1½- ½	
3403.69	A	8	0.99	4.62	2½-3½	a^4P-y^4F^o
3431.57	A	6	0.96	4.55	1½-2½	(59)
3454.57	A	4	0.93	4.50	½-1½	
3469.94	A	4	0.99	4.55	2½-2½	
3481.44	A	2	0.96	4.50	1½-1½	
m3520.91	P	Zr+	0.99	4.50	2½-1½	
3362.70	A	4	0.99	4.66	2½-3½	a^4P-y^3F^o
3376.25	A	7	0.96	4.61	1½-2½	(60)
3413.39	A	5	0.99	4.61	2½-2½	
3374.71	A	15	0.99	4.65	2½-1½	a^4P-z^4S^o
3338.41	A	10	0.96	4.65	1½-1½	(61)
3313.70	A	8	0.93	4.65	½-1½	
3285.89	A	4	0.99	4.75	2½-2½	a^4P-z^4P^o
•3288.81	A	10	0.96	4.71	1½-1½	(62)
3272.30	P		0.93	4.70	½- ½	
3324.03	P		0.99	4.71	2½-1½	
3296.41	A	7	0.96	4.70	1½- ½	
3251.46	P		0.96	4.75	1½-2½	
3264.81	A	6	0.93	4.71	½-1½	
3106.58	A	35	0.99	4.97	2½-3½	a^4P-x^4D^o
3133.49	A	25	0.96	4.89	1½-2½	(63)
3155.68	A	10	0.93	4.84	½-1½	
3165.45	A	7	0.99	4.89	2½-2½	
3178.10	A	15	0.96	4.84	1½-1½	
3181.58	A	8	0.93	4.81	½- ½	
3210.98	A	3	0.99	4.84	2½-1½	
3204.36	A	4	0.96	4.81	1½- ½	
2975.16	A	1	0.96	5.10	1½-1½	a^4P-y^2P^o †
3009.85	A	2	0.93	5.03	½- ½	(64)
3048.42	A	2	0.99	5.04	2½-3½	a^4P-y^2G^o (65)
4816.47	A	1	1.01	3.57	4½-3½	a^2G-z^4G^o (66)
4461.22	A	10	1.01	3.77	4½-3½	a^2G-z^2F^o
4613.95	A	5	0.97	3.64	3½-2½	(67)
4399.44	A	2	0.97	3.77	3½-3½	
4215.76	A	1	1.01	3.93	4½-4½	a^2G-z^4F^o
4401.35	A	2	0.97	3.77	3½-2½	(68)
4286.51	A	5	0.97	3.85	3½-2½	a^2G-z^2D^o (69)
4034.84	A	0	0.97	4.03	3½-2½	a^2G-z^2D^o (70)
3698.17	A	100	1.01	4.34	4½-4½	a^2G-z^2G^o
3751.60	A	75	0.97	4.26	3½-3½	(71)
3796.47	A	20	1.01	4.26	4½-3½	
3655.56	A	7	0.97	4.34	3½-4½	
3344.80	A	15	1.01	4.70	4½-3½	a^2G-y^4D^o
3408.09	A	10	0.97	4.59	3½-2½	(72)
3309.90	A	4	0.97	4.70	3½-3½	
•3414.65 §	A	12	1.01	4.62	4½-3½	a^2G-y^4F^o
3443.57	A	7	0.97	4.55	3½-2½	(73)
3378.30	A	5	0.97	4.62	3½-3½	
3373.42	A	8	1.01	4.66	4½-3½	a^2G-y^2F^o
3387.87	A	12	0.97	4.61	3½-2½	(74)
3337.93	A	2	0.97	4.66	3½-3½	
3115.73	A	2	1.01	4.97	4½-3½	a^2G-x^4D^o (75)
3054.84	A	30	1.01	5.05	4½-4½	a^2G-y^2G^o
3038.05	A	20	0.97	5.04	3½-3½	(76)
3057.22	A	5	1.01	5.04	4½-3½	
3025.70	A	2	0.97	5.05	3½-4½	
2976.61	A	10	1.01	5.15	4½-4½	a^2G-z^2H^o † (77)
4854.65	A	0	1.23	3.77	2½-3½	b^4P-z^2F^o (78)
4359.74	A	10	1.23	4.06	3½-3½	b^4P-z^4D^o
4370.96	A	8	1.20	4.03	1½-2½	(79)
4403.35	A	6	1.18	3.98	½-1½	
4414.54	A	5	1.23	4.03	2½-2½	
4440.45	A	10	1.20	3.98	1½-1½	
•4457.42 §	A	8	1.18	3.95	½- ½	
4485.44	A	2	1.23	3.98	2½-1½	
4495.44	A	3	1.20	3.95	1½- ½	
4222.41	A	3	1.20	4.13	1½-2½	b^4P-y^2D^o
4266.72	A	1	1.18	4.07	½-1½	(80)
3853.07	A	2	1.23	4.43	2½-1½	b^4P-z^2P^o
3819.84	A	2	1.20	4.43	1½-1½	(81)
3792.32	A	2	1.18	4.43	½-1½	
3717.02	A	2	1.20	4.52	1½-1½	b^4P-y^4D^o
3561.11	A	1	1.23	4.70	2½-3½	(82)
3690.98	P		1.18	4.52	½-1½	
3607.39	A	7	1.23	4.65	2½-1½	b^4P-z^4S^o
3578.22	A	7	1.20	4.65	1½-1½	(83)
3554.09	A	7	1.18	4.65	½-1½	
3506.04	A	4	1.23	4.75	2½-2½	b^4P-z^4P^o
3521.28	P		1.20	4.71	1½-1½	(84)
3506.48	A	2	1.18	4.70	½- ½	
3549.51	A	10	1.23	4.71	2½-1½	
3529.99	A	5	1.20	4.70	1½- ½	
3478.50	A	3	1.20	4.75	1½-2½	
•3497.90	A	12	1.18	4.71	½-1½	
3302.66	A	7 1	1.23	4.97	2½-3½	b^4P-x^4D^o
3343.81	A	4	1.20	4.89	1½-2½	(85)
3369.27	A	3	1.23	4.89	2½-2½	
3394.63	A	3	1.20	4.84	1½-1½	
3402.52	A	1	1.18	4.81	½- ½	
3424.64	A	1	1.20	4.81	1½- ½	
3008.13	A	3	1.23	5.33	2½-2½	b^4P-y^4P^o
3015.67	A	1	1.20	5.30	1½-1½	(86)
m3036.33	P	Zr+	1.23	5.30	2½-1½	
3025.16	A	3w	1.20	5.28	1½- ½	
2987.80	A	5	1.20	5.33	1½-2½	
2998.49	A	2	1.18	5.30	½-1½	
5124.98	A	2	1.53	3.93	5½-4½	a^2H-z^4F^o (87)
4379.78	A	9	1.53	4.34	5½-4½	a^2H-z^2G^o
4442.99	A	25	1.48	4.26	4½-3½	(88)
4308.94	A	4	1.48	4.34	4½-4½	
3874.37	A	1	1.48	4.66	4½-3½	a^2H-y^2F^o (89)
3505.47	A	15	1.53	5.05	5½-4½	a^2H-y^2G^o
3463.02	A	35	1.48	5.04	4½-3½	(90)
3459.95	A	3	1.48	5.05	4½-4½	
3326.81	A	15	1.53	5.24	5½-5½	a^2H-z^2H^o
3359.96	A	12	1.48	5.15	4½-4½	(91)
3402.87	A	7	1.53	5.15	5½-4½	
3285.77	A	3	1.48	5.24	4½-5½	
3275.65	A	1	1.48	5.25	4½-3½	a^2H-x^2F^o (92)
6100.04	A	2	1.75	3.77	2½-3½	b^2D-z^4F^o
6114.78	A	2	1.66	3.68	1½-1½	(93)
5418.01	A	1	1.75	4.03	2½-2½	b^2D-z^4D^o (94)
5191.60	A	7	1.75	4.13	2½-2½	b^2D-y^2D^o
5112.28	A	7	1.66	4.07	1½-1½	(95)
5311.78	A	2	1.75	4.07	2½-1½	
5000.91	A	3	1.66	4.13	1½-2½	
4445.88	A	1	1.66	4.43	1½-1½	b^2D-z^2P^o (96)
4186.70	A	12	1.75	4.70	2½-3½	b^2D-y^4D^o
4210.62	A	5	1.66	4.59	1½-2½	(97)
4383.10	A	1	1.66	4.47	1½- ½	
4296.74	A	8	1.75	4.62	2½-3½	b^2D-y^4F^o
4264.91	A	4	1.66	4.55	1½-2½	(98)
4342.23	A	1	1.66	4.50	1½-1½	
4231.64	A	8	1.75	4.66	2½-3½	b^2D-y^2F^o
4179.81	A	15	1.66	4.61	1½-2½	(99)
4312.23	A	3	1.75	4.61	2½-2½	
3833.87	A	2	1.75	4.97	2½-3½	b^2D-x^4D^o
3813.98	A	0	1.66	4.89	1½-2½	(100)
3923.92	A	1	1.75	4.89	2½-2½	
3678.91	A	10	1.75	5.10	2½-1½	b^2D-y^2P^o
3662.14	A	8	1.66	5.03	1½- ½	(101)
3582.08	A	2	1.66	5.10	1½-1½	
3633.49	A	10	1.75	5.15	2½-2½	b^2D-x^2D^o
3565.41	A	5	1.66	5.12	1½-1½	(102)
3661.33	A	4	1.75	5.12	2½-1½	
3539.05	A	4	1.66	5.15	1½-2½	
3527.42	A	7	1.75	5.25	2½-3½	b^2D-x^2F^o
3396.66	A	6	1.66	5.29	1½-2½	(103)
m3483.59	P	Zr+	1.75	5.29	2½-2½	
3222.48	A	15	1.75	5.58	2½-2½	b^2D-w^2D^o
3161.01	A	2	1.66	5.56	1½-1½	(104)
3236.17	A	1	1.75	5.56	2½-1½	
3183.26	P		1.75	5.63	2½-1½	b^2D-x^2P^o
3074.55	A	1	1.66	5.67	1½- ½	(105)
3110.52	A	1	1.66	5.63	1½-1½	
•6106.47	A	2	1.75	3.77	4½-3½	b^2G-z^2F^o (106)
4761.67	A	1	1.75	4.34	4½-4½	b^2G-z^2G^o
4894.43	A	0	1.74	4.26	3½-3½	(107)
4925.90	A	1	1.75	4.26	4½-3½	
4191.50	A	6	1.75	4.70	4½-3½	b^2G-y^4D^o
4325.64	A	3	1.74	4.59	3½-2½	(108)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Zr II continued						
4301.81	A	5	1.75	4.62	4½-3½	$b^3G-y^4F^o$
4382.95	A	1	1.74	4.55	3½-2½	(109)
4236.56	A	5	1.75	4.66	4½-3½	$b^3G-y^2F^o$
4293.14	A	7	1.74	4.61	3½-2½	(110)
3818.78	A	1	1.74	4.97	3½-3½	$b^3G-x^4D^o$ (111)
3745.97	A	40	1.75	5.05	4½-4½	$b^3G-y^2G^o$
3731.26	A	35	1.74	5.04	3½-3½	(112)
3749.55	P		1.75	5.04	4½-3½	
3727.72	A	10	1.74	5.05	3½-4½	
3542.65	A	25	1.75	5.24	4½-5½	$b^3G-z^2H^o$
3611.90	A	15	1.74	5.15	3½-4½	(113)
3629.12	A	1	1.75	5.15	4½-4½	
3530.85	A	6	1.75	5.25	4½-3½	$b^3G-x^2F^o$
*3471.14 §	A	8	1.74	5.29	3½-2½	(114)
3514.64	A	4	1.74	5.25	3½-3½	
5350.10	A	5	1.82	4.13	2½-2½	$c^2D-y^2D^o$
5350.36	A	5	1.77	4.07	1½-1½	(115)
5477.82	A	2	1.82	4.07	2½-1½	
4719.80	A	1	1.82	4.43	2½-1½	$c^2D-z^2P^o$
4565.43	A	3	1.77	4.47	1½- ½	(116)
4624.86	A	1	1.77	4.43	1½-1½	
4289.18	A	2	1.82	4.70	2½-3½	$c^2D-y^4D^o$ (117)
4404.81	A	2	1.82	4.62	2½-3½	$c^2D-y^4F^o$
4429.34	A	2	1.77	4.55	1½-2½	(118)
4336.36	A	2	1.82	4.66	2½-3½	$c^2D-y^2F^o$
4337.63	A	5	1.77	4.61	1½-2½	(119)
3757.80	A	8	1.82	5.10	2½-1½	$c^2D-y^2P^o$
3782.72	A	5	1.77	5.03	1½- ½	(120)
3827.51	A	1	1.82	5.04	2½-3½	$c^2D-y^2G^o$ (121)
3710.47	A	1	1.82	5.15	2½-2½	$c^2D-x^2D^o$
3679.64	A	1	1.77	5.12	1½-1½	(122)
3651.50	A	2	1.77	5.15	1½-2½	
3599.91	A	7	1.82	5.25	2½-3½	$c^2D-x^2F^o$
3500.15	A	4	1.77	5.29	1½-2½	(123)
3511.55	A	2	1.82	5.33	2½-2½	$c^2D-y^4P^o$
3550.11	P		1.82	5.30	2½-1½	(124)
3282.84	A	12	1.82	5.58	2½-2½	$c^2D-w^2D^o$
*3250.44 §	A	20	1.77	5.56	1½-1½	(125)
3236.61	A	4	1.77	5.58	1½-2½	
3242.18	A	3	1.82	5.63	2½-1½	$c^2D-x^2P^o$
3159.12	A	5	1.77	5.67	1½- ½	(126)
3197.08	A	3	1.77	5.63	1½-1½	
3015.86	A	2	1.82	5.91	2½-2½	$c^2D-w^2F^o$ (127)
6346.54	A	1	2.40	4.34	3½-4½	$b^3F-z^2G^o$
6678.03	A	3	2.41	4.26	2½-3½	(128)
4661.78	A	5	2.40	5.05	3½-4½	$b^3F-y^2G^o$
4685.19	A	4	2.41	5.04	2½-3½	(129)
4494.41	A	8	2.40	5.15	3½-2½	$b^3F-x^2D^o$
4553.96	A	12	2.41	5.12	2½-1½	(130)
4483.04	A	3	2.40	5.15	3½-4½	$b^3F-z^2H^o$ (131)
4333.28	A	15	2.40	5.25	3½-3½	$b^3F-x^2F^o$
*4282.21 §	A	6	2.41	5.29	2½-2½	(132)
4267.30	P		2.40	5.29	3½-2½	
4348.64	P		2.41	5.25	2½-3½	
4205.91	A	2	2.40	5.33	3½-3½	$b^3F-y^4P^o$ (133)
3881.97	A	7	2.40	5.58	3½-2½	$b^3F-w^2D^o$
3914.36	A	7	2.41	5.56	2½-1½	(134)
6787.15	A	2	2.48	4.30	1½- ½	$b^3P-z^2S^o$ (135)
6313.57	A	1	2.48	4.43	1½-1½	$b^3P-z^2P^o$
6028.64	A	2	2.42	4.47	½- ½	(136)
*6106.47	A	2	2.48	4.50	1½-1½	$b^3P-y^4F^o$ (137)
4703.03	A	5	2.48	5.10	1½-1½	$b^3P-y^2P^o$
4734.94	A	1	2.42	5.03	½- ½	(138)
4841.98	A	0	2.48	5.03	1½- ½	
4601.97	A	2	2.42	5.10	½-1½	
4629.07	A	5	2.48	5.15	1½-2½	$b^3P-x^2D^o$
4574.49	A	6	2.42	5.12	½-1½	(139)
4674.41	A	1	2.48	5.12	1½-1½	
4388.50	A	2	2.48	5.29	1½-2½	$b^3P-x^2F^o$ (140)
4323.62	A	2	2.48	5.33	1½-2½	$b^3P-y^4P^o$ (141)
3982.01	A	3	2.48	5.58	1½-2½	$b^3P-w^2D^o$
*3939.54 §	A	8	2.42	5.56	½-1½	(142)
4002.95	A	2	2.48	5.56	1½-1½	
3922.36	A	1	2.48	5.63	1½-1½	$b^3P-x^2P^o$ (143)
3048.28	A	5	2.48	6.53	1½-1½	$b^3P-w^2P^o$
3032.00	A	3	2.42	6.49	½- ½	(144)
3075.55	A	1	2.48	6.49	1½- ½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Zr II continued						
4908.67	A	1	3.11	5.63	½-1½	$a^2S-x^2P^o$ (145)
3612.34	A•	3	3.11	6.53	½-1½	$a^2S-w^2P^o$
3650.73	A	7	3.11	6.49	½- ½	(146)
3026.18	A	3wl	3.93	8.01	4½-4½	$z^4F^o-e^4F$ †
3018.53	A	3w	3.86	7.95	3½-3½	(147)
3000.59	A	3w	3.77	7.88	2½-2½	
3024.72	A	3w	3.77	7.85	2½-1½	
2988.74	A	4w	4.13	8.25	2½-2½	$y^2D^o-e^2D$
2966.27	A	2w	4.07	8.23	1½-1½	(148)
3239.73	A	1l	4.43	8.25	1½-2½	$z^2P^o-e^2D$
3278.89	A	2	4.47	8.23	½-1½	(149)

Strongest Unclassified Lines of Zr II

3827.27	A	1
3423.82	A	3l
3068.32	A	2w
*3063.63 §	A	3wl
3038.59	A	2
3018.08	A	2w
2994.05	A	4w

Cb I	I P †	Anal C	List D	July 1943	
4058.933//	A	2000w	0.13	3.17	4½-5½ $a^6D-y^6F^o$ †
4079.726	A	1000w	0.09	3.11	3½-4½ (1)
4100.918	A	600w	0.05	3.06	2½-3½
4133.812	A	400	0.02	3.01	1½-2½
4137.090	A	200	0.00	2.98	½-1½
4139.703	A	400w	0.13	3.11	4½-4½
4152.575	A	500	0.09	3.06	3½-3½
4164.661	A	300	0.05	3.01	2½-2½
4163.658	A	250	0.02	2.98	1½-1½
4168.122	A	250w	0.00	2.96	½- ½
3791.209	A	300r	0.13	3.38	4½-4½ $a^6D-y^6D^o$ †
3834.882	A	100	0.09	3.31	3½-3½ (2)
3713.018	A	300r	0.13	3.45	4½-4½ $a^6D-x^6D^o$ †
3739.80	A	300r	0.09	3.39	3½-3½ (3)
3759.556	A	200r	0.05	3.33	2½-2½
3790.138	A	200r	0.13	3.39	4½-3½
3803.928	A	400r	0.09	3.33	3½-2½
3798.137	A	300r	0.05	3.30	2½-1½
3787.064	A	150	0.02	3.28	1½- ½
3697.850	A	200	0.05	3.39	2½-3½
3726.235	A	250	0.02	3.33	1½-2½
3742.393	A	200r	0.00	3.30	½-1½
3580.377	A	400r	0.13	3.58	4½-3½ $a^6D-y^6P^o$ †
3575.850	A	200	0.09	3.54	3½-2½ (4)
*3535.304	A	400w	0.09	3.58	3½-3½

Cb II	I P †	Anal C	List C	July 1943	
3094.173//	A	2000wR	0.51	4.50	5-6 $a^5F-z^5G^o$ †
3130.780	A	1500wR	0.44	4.38	4-5 (1)
3163.403	A	1000R	0.37	4.28	3-4
3194.983	A	700R	0.32	4.19	2-3
3225.478	A	500wR	0.29	4.12	1-2
3191.096	A	200w	0.51	4.38	5-5
3215.595	A	300wr	0.44	4.28	4-4
3236.403	A	300r	0.37	4.19	3-3
3254.070	A	200r	0.32	4.12	2-2
3038.436	A	300w	0.44	4.51	4-3 $a^5F-z^3D^o$ †
3076.864	A	200	0.37	4.39	3-2 (2)
3099.180	A	100	0.32	4.31	2-1
2982.100	A	100	0.37	4.51	3-3
3412.934	A	150	0.90	4.51	2-3 $a^3P-z^3D^o$ †
3408.678	A	100	0.76	4.39	1-2 (3)
3409.191	A	100	0.69	4.31	0-1
3540.961	A	200	1.03	4.51	4-3 $a^3F-z^3D^o$ †
3619.514	A	200	0.98	4.39	3-2 (4)
3651.182	A	300	0.93	4.31	2-1
3145.405	A	500rs	1.03	4.95	4-5 $a^3F-z^3G^o$ †
3180.290	A	400	0.98	4.86	3-4 (5)
3206.350	A	300rs	0.93	4.78	2-3
3223.332	A	100	1.03	4.86	4-4
3247.478	A	150w	0.98	4.78	3-3
3440.589	A	200	1.36	4.95	5-5 $a^3G-z^3G^o$ †
3479.567	A	150	1.31	4.86	4-4 (6)
3515.421	A	200w	1.27	4.78	3-3
3425.432	A	300w	1.36	4.97	5-4 $a^3G-z^3F^o$ †
3426.562	A	250w	1.31	4.91	4-3 (7)
3478.79	A	100	1.27	4.81	3-2
4367.966	A	100n	1.69	4.51	4-3 $b^3F-z^3D^o$ †
4579.446	A	150n	1.69	4.39	3-2 (8)
4537.648	A	50n	1.58	4.31	2-1

Cb II	I P †	Anal C	List D	July 1943	
3781.379	A	200	1.69	4.95	4-5 $b^3F-z^3G^o$ †
3898.292	A	200	1.69	4.86	3-4 (9)
3863.056	A	150	1.58	4.78	2-3
3763.13	A	8n	1.69	4.97	4-4 $b^3F-z^3F^o$ †
3831.840	A	200	1.69	4.91	3-3 (10)
3818.862	A	200	1.58	4.81	2-2
3952.367	A	100n	1.69	4.81	3-2

Strongest Unclassified Lines of Cb II

3717.06	A	300
3659.602	A	300
3510.362	A	400
3432.708	A	400
3283.463	A	400
3263.365	A	300
3260.564	A	350w
3127.526	A	500
3064.530	A	250r
3034.95	A	200wR
3032.767	A	400rs
2994.725	A	300w

Mo I	I P 7.06	Anal C	List D	July 1943	
3798.259 //	A	50R	0.00	3.25	3-4 $a^7S-z^7P^o$
3864.115	A	50R	0.00	3.19	3-3 (1)
3902.968	A	50R	0.00	3.16	3-2
3112.125	A	5n	0.00	3.97	3-4 $a^7S-z^7D^o$
3158.156	A	5R	0.00	3.91	3-3 (2)
3208.838	A	10n	0.00	3.85	3-2
3132.591	A	10R	0.00	3.94	3-4 $a^7S-y^7P^o$
3170.333	A	10R	0.00	3.89	3-3 (3)
3193.969	A	10R	0.00	3.86	3-2
5506.51	B	40R	1.33	3.57	2-3 $a^5S-z^5P^o$
5533.01	B	30R	1.33	3.56	2-2 (4)
5570.46	B	25R	1.33	3.54	2-1
6030.66	B	9	1.52	3.57	4-3 $a^5D-z^5P^o$ †
5888.32	B	6	1.46	3.56	3-2 (5)
5791.86	B	6	1.41	3.54	2-1
5858.28	B	7	1.46	3.57	3-3
5751.41	B	6	1.41	3.56	2-2
5689.32	B	7	1.38	3.54	1-1
4636.467	A	10	1.52	4.19	4-3 $a^5D-y^5P^o$ †
4663.767	A	5	1.46	4.11	3-2 (6)
4661.933	A	5	1.41	4.06	2-1
4524.344	A	10	1.46	4.19	3-3
4576.500	A	10	1.41	4.11	2-2
4595.160	A	10	1.38	4.06	1-1
4277.246	A	12	1.52	4.41	4-5 $a^5D-z^5F^o$ †
4288.65	A	5n	1.46	4.34	3-4 (7)
4293.238	A	10	1.41	4.29	2-3
3833.757	A	10n	1.52	4.74	4-4 $a^5D-z^5D^o$ †
3828.883	A	10	1.46	4.69	3-3 (8)
3826.701	A	10	1.41	4.64	2-2
3823.987	A	5	1.38	4.60	1-1
3901.775	A	10	1.52	4.69	4-3
3886.325	A	(3)	1.46	4.64	3-2
3869.085	A	10	1.41	4.60	2-1
3847.252	A	10	1.38	4.58	1-0
3763.356	A	5	1.46	4.74	3-4
3770.517	A	8	1.41	4.69	2-3
3781.597	A	10	1.38	4.64	1-2
3405.934	A	10r	1.52	5.15	4-5 $a^5D-y^5F^o$ †
3384.617	A	10n	1.46	5.11	3-4 (9)
3358.130	A	10	1.41	5.09	2-3
3344.750	A	10	1.38	5.07	1-2
3327.308	A	10r	1.35	5.06	0-1
3361.371	A	10r	1.52	5.20	4-4 a^5D-8^o † (10)
3389.016	A	10r	1.41	5.17	2-3 a^5D-7^o † (11)
4012.51	C	(1)	2.07	5.15	6-5 $a^5G-y^5F^o$ †
4062.09	A	5Nr	2.07	5.11	5-4 (12)
4084.391	A	10n	2.07	5.09	4-3
4107.477	A	8r	2.06	5.07	3-2
4102.158	A	10	2.05	5.06	2-1
4056.027	A	10	2.07	5.11	4-4

Mo II	I P †	Anal D	List D	Aug 1943	
3446.085	A	6	2.94	6.52	4½-4½ $^4F-\ ^4F^o$
3524.646	A	8	2.94	6.45	3½-3½ (1)
3596.351	A	4	2.95	6.39	2½-2½
3670.668	A	3	2.98	6.34	1½-1½
3522.063	A	2	2.94	6.45	4½-3½
3585.91	B	2n	2.94	6.39	3½-2½
3643.47	A	2	2.95	6.34	2½-1½
3448.542	A	2	2.94	6.52	3½-4½
3534.688	A	3	2.95	6.45	2½-3½
3622.850	A	2	2.98	6.39	1½-2½
3136.465	A	4	2.94	6.88	4½-3½ $^4F-\ ^4D^o$ †
3187.592	A	4	2.94	6.82	3½-2½ (2)
3250.747	A	3	2.95	6.75	2½-1½

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Mo II continued						
4250.689	A	10	3.13	6.03	3½-2½	^4D- $^4P^o$ †
4363.644	A	10	3.10	5.93	2½-1½	(3)
4433.501	A	8	3.04	5.83	1½- ½	
4209.649	A	5	3.10	6.03	2½-2½	
4279.023	A	10	3.04	5.93	1½-1½	
4377.765	A	10	3.01	5.83	½- ½	
3941.478	A	10	3.13	6.26	3½-4½	^4D- $^6P^o$ †
3961.503	A	15	3.13	6.24	3½-3½	(4)
3986.201	A	6	3.10	6.20	2½-1½	
3835.144	A	20	3.13	6.52	3½-4½	^4D- $^4F^o$ †
3888.307	A	15	3.10	6.45	2½-3½	(5)
3893.645	A	10	3.04	6.39	1½-2½	
3703.553	A	8	3.01	6.34	½-1½	
3719.74	A	3	3.13	6.45	3½-3½	
3755.54	A	5	3.10	6.39	2½-2½	
3742.34	A	6	3.04	6.34	1½-1½	
3293.312	A	12	3.13	6.88	3½-3½	^4D- $^4P^o$
3320.902	A	5	3.10	6.82	2½-2½	(8)
3329.215	A	5	3.04	6.75	1½-1½	
3347.269	A	3	3.01	8.70	½- ½	
3346.403	A	4	3.13	6.82	3½-2½	
3380.215	A	3	3.10	6.75	2½-1½	
3379.782	A	3	3.04	8.70	1½- ½	
3367.639	A	3	3.10	6.88	2½-3½	
3271.866	A	4	3.04	6.82	1½-2½	
3297.684	A	3	3.01	6.75	½-1½	

Ru I	I P 7.5	Anal C	List D	Aug 1942		
3799.347	A	(8)	0.00	3.25	5-4	a^5F-z^5D^o †
3798.901	A	(8)	0.15	3.40	4-3?	(1)
3728.030	A	(10R)	0.00	3.31	5-5	a^5F-z^5F^o †
3726.936	A	(10R)	0.15	3.46	4-4	(2)
3730.433	A	(4)	0.26	3.57	3-3	
3742.280	A	(10)	0.33	3.63	2-2	
3760.031	A	(4)	0.38	3.67	1-1	
3661.353	A	(6)	0.15	3.52	4-5	a^5F-z^3G^o †
3417.353	A	(20)	0.26	3.87	3-4	(3)
3430.772	A	(7)	0.33	3.93	2-3	
3498.943//	A	(50R)	0.00	3.53	5-6	a^5F-z^5G^o †
3436.737	A	(30R)	0.15	3.74	4-5	(4)
3596.179	A	(20)	0.26	3.89	3-4	
3593.032	A	(20)	0.33	3.77	2-3	
3589.215	A	(5)	0.38	3.82	1-2	
3301.587	A	(8)	0.00	3.74	5-5	
4554.509	A	(10R)	0.81	3.52	4-5	a^3F-z^3G^o †
4297.711	A	(10)	1.00	3.87	3-4	(5)
4410.026	A	(8)	1.13	3.93	2-3	
4212.063	A	(10)	0.81	3.74	4-5	a^3F-z^5G^o †
4584.445	A	30	1.00	3.69	3-4	(6)
4681.786	A	10	1.13	3.77	2-3	
4080.600	A	(20)	0.81	3.83	4-3	a^3F-y^5F^o †
4144.164	A	(10)	1.00	3.98	3-2	(7)
4199.902	A	(10)	0.81	3.75	4-4	a^3F-z^3F^o † (8)
3867.839	A	(8)	0.81	4.00	4-3	a^3F-z^3D^o †
3984.858	A	(10)	1.00	4.10	3-2	(9)
4097.791	A	(10)	1.13	4.15	2-1	
5309.267	A	20	0.92	3.25	4-4	a^5D-z^5D^o †
5636.235	A	35	1.08	3.25	3-4	(10)
5155.138	A	12	1.12	3.51	1-2	
5171.028	A	40	0.92	3.31	4-5	a^5D-z^5F^o †
5142.763	A	8	1.06	3.46	3-4	(11)
5040.744	A	8	1.12	3.57	2-3	
4911.593	A	3	1.12	3.83	1-2	
4889.153	A	25	0.92	3.46	4-4	
4921.074	A	12	1.06	3.57	3-3	
4907.888	A	8	1.12	3.83	2-2	
4889.977	A	8	0.92	3.57	4-3	
4757.841	A	20	0.92	3.52	4-5	a^5D-z^3G^o † (12)
4372.208	A	(10)	0.92	3.75	4-4	a^5D-z^3F^o † (13)
4709.484	A	35	1.13	3.75	4-4	b^3F-z^3F^o † (14)

Ru II	I P †	Anal D	List C	Sept 1943		
3690.032	A	80	2.39	5.74	3½-4½	^4D- $^6D^o$ †
3657.574	A	50	2.39	5.77	3½-3½	(1)
3734.454	A	25	2.53	5.84	2½-3½	
3777.919	A	10	2.62	5.89	1½-1½	
3177.060	A	100	2.39	6.28	3½-4½	^4D- $^6F^o$ †
3294.220	A	80	2.53	6.28	2½-3½	(2)
3339.810	A	50	2.62	6.32	1½-2½	
3369.295	A	25	2.67	6.34	½-1½	
3175.317	A	10	2.39	6.28	3½-3½	
3143.657	A	15	2.39	6.32	3½-2½	
3107.586	A	10	2.39	8.36	3½-3½	^4D- $^6P^o$ †
3094.555	A	8	2.53	6.52	2½-2½	(3)
3221.378	A	15	2.53	6.36	2½-2½	
2978.593	A	100	2.39	6.54	3½-4½	^4D- $^4F^o$ †
2985.564	A	100	2.53	6.69	2½-3½	(4)
2979.957	A	60	2.62	6.76	1½-2½	
2977.226	A	30	2.67	6.82	½-1½	
2979.726	A	40	2.53	6.67	2½-2½	^4D- $^4D^o$ †
2991.626	A	40	2.62	6.75	1½-1½	(5)
2998.896	A	20	2.67	6.79	½- ½	
3259.007?	A	20	2.75	6.54	3½-4½	^2F- $^4F^o$ †
3060.252	A	8	2.66	6.69	2½-3½	(8)
3221.978	A	20	2.75	6.58	3½-3½	^2F- $^4D^o$ †
3075.336	A	6	2.66	6.67	2½-2½	(7)

Rh I	I P 7.7	Anal C	List D	Aug 1943		
3692.357	A	50	0.00	3.34	4½-3½	a^4F-z^4D^o †
3657.987	A	50	0.19	3.56	3½-2½	(1)
3596.194	A	20	0.32	3.75	2½-1½	
3612.470	A	15	0.43	3.85	1½- ½	
3434.893//	A	200R	0.00	3.59	4½-5½	a^4F-z^4G^o †
3700.909	A	30	0.19	3.53	3½-4½	(2)
3507.316	A	20	0.32	3.84	2½-3½	
3474.780	A	20	0.43	3.98	1½-2½	
3502.524	A	50	0.00	3.53	4½-4½	
3396.85	A	100R	0.00	3.83	4½-4½	a^4F-z^4F^o †
3528.024	A	30	0.19	3.69	3½-3½	(3)
3463.040	A	30	0.32	3.89	2½-2½	
3470.657	A	20	0.43	3.98	1½-1½	
3583.098	A	10	0.19	3.63	3½-4½	
3668.215	A	15	0.32	3.69	2½-3½	
3323.092	A	50R	0.19	3.90	3½-4½	a^4F-z^2G^o †
3283.573	A	20R	0.32	4.08	2½-3½	(4)
3597.147	A	20	0.41	3.84	2½-3½	a^2D-z^4G^o † (5)
3478.908	A	15	0.41	3.96	2½-2½	a^2D-z^2D^o
3543.948	A	10	0.70	4.18	1½-1½	(6)
3271.812	A	10	0.41	4.18	2½-1½	
3788.474	A	15	0.70	3.96	1½-2½	
3856.515	A	10	0.70	3.90	3½-4½	a^2F-z^2G^o †
3958.865	A	30	0.96	4.08	2½-3½	(7)
3799.311	A	20	0.70	3.95	3½-3½	a^2F-z^2F^o
3823.262	A	15	0.96	4.19	2½-2½	(8)
4128.870	A	20	0.96	3.95	2½-3½	
3538.142	A	4	0.70	4.19	3½-2½	
3793.217	A	15	0.70	3.96	3½-2½	a^2F-z^2D^o
3833.889	A	10	0.98	4.18	2½-1½	(9)
4121.682	A	15	0.96	3.96	2½-2½	

Rh II	I P †	Anal C	List D	Nov 1943		
3207.297	A	250	3.13	6.98	4-4	^3F- $^5D^o$ †
3028.808	A	75	3.39	7.46	3-3	(1)
3074.061	A	50	3.56	7.57	2-2	
3434.57	P		3.39	8.98	3-4	
3183.284	A	100	3.58	7.48	2-3	
3159.254	A	300	3.13	7.04	4-5	^3F- $^5F^o$ †
3151.500	A	75	3.39	7.30	3-4	(2)
3388.139	A	2	3.58	7.20	2-3	
3233.324	A	250	3.39	7.20	3-3	
3239.101	A	30	3.56	7.37	2-2	
3019.819	A	150	3.56	7.85	2-3	^3F- $^5G^o$ †
2988.387	A	50	3.56	7.89	2-2	(3)

Rh II	I P †	Anal A	List D	Nov 1943		
3477.838	A	200	3.43	6.98	3-4	^5P- $^5D^o$
3093.481	A	200	3.47	7.46	2-3	(4)
3096.740	A	150	3.59	7.57	1-2	
3062.201	A	100	3.43	7.46	3-3	
3008.996	A	200	3.47	7.57	2-2	
3047.160	A	200	3.59	7.64	1-1	
2979.382	A	2	3.43	7.57	3-2	
2962.167	A	75	3.47	7.64	2-1	
3035.013	A	200	3.59	7.66	1-0	
3187.889	A	200	3.43	7.30	3-4	^5P- $^5F^o$
3307.362	A	200	3.47	7.20	2-3	(5)
3264.291	A	75	3.59	7.37	1-2	
3166.948	A	200	3.47	7.37	2-2	
3173.678	A	100	3.59	7.48	1-1	
3081.585	A	100	3.47	7.48	2-1	
3267.480	A	250	3.92	7.69	5-4	^3G- $^3F^o$
3240.516	A	150	4.03	7.83	4-3	(6)
3211.947	A	150	4.18	8.02	3-2	
3815.012	A	100	4.23	7.46	2-3	^3P- $^5D^o$
3754.13	P		4.29	7.57	1-2	(7)
3720.69	P		4.32	7.64	0-1	
3269.60	P		4.23	8.00	2-3	^3P- $^3D^o$
3188.603	A	150	4.29	8.16	1-2	(8)
3147.931	A	8	4.32	8.24	0-1	
3140.272	A	50	4.23	8.16	2-2	
3119.837	A	5	4.29	8.24	1-1	

Pd I	I P 8.30	Anal A	List D	Aug 1942		
3634.71	B	700R	0.81	4.21	3-2	$5s^3D$-$5p^3P^o$
3518.95	A	500r	0.96	4.47	2-1	(1)
3571.16	A	200	1.25	4.70	1-0	
3799.17	B	75	0.96	4.21	2-2	
3832.31	B	75	1.25	4.47	1-1	
3404.60 //	A	1000R	0.81	4.44	3-4	$5s^3D$-$5p^3F^o$
3609.56	A	600R	0.96	4.38	2-3	(2)
3481.17	A	400r	1.25	4.79	1-2	
3460.76	A	300r	0.81	4.38	3-3	
3218.98	A	20	0.96	4.79	2-2	
3242.72	A	1000R	0.81	4.62	3-3	$5s^3D$-$5p^3D^o$
3421.24	A	500	0.96	4.56	2-2	(3)
3302.15	A	400	1.25	4.98	1-1	
3287.26	A	50	0.81	4.56	3-2	
3065.30	A	100	0.96	4.98	2-1	
3372.02	A	300	0.96	4.62	2-3	
3718.93	B	100	1.25	4.56	1-2	
3002.66	A	50	0.81	4.92	3-3	$5s^3D$-$5p^1F^o$
3114.05	A	200	0.96	4.92	2-3	(4)
3027.92	A	100	0.96	5.03	2-2	$5s^3D$-$5p^1D^o$ †
3258.80	A	300	1.25	5.03	1-2	(5)
3021.74	A	10	0.96	5.04	2-1	$5s^3D$-$5p^1P^o$
3251.68	A	200	1.25	5.04	1-1	(6)
4212.95	B	200	1.45	4.38	2-3	$5s^1D$-$5p^3F^o$
3690.35	B	200	1.45	4.79	2-2	(7)
3894.19	B	200	1.45	4.62	2-3	$5s^1D$-$5p^3D^o$
3958.66	B	200	1.45	4.56	2-2	(8)
3489.79	A	200r	1.45	4.98	2-1	
3553.10	A	500r	1.45	4.92	2-3	$5s^1D$-$5p^1F^o$ (9)
3441.40	A	300	1.45	5.03	2-2	$5s^1D$-$5p^1D^o$ (10)
3433.44	A	250	1.45	5.04	2-1	$5s^1D$-$5p^1P^o$ (11)

Pd II See introduction

Ag I	I P 7.54	Anal A	List C	May 1942		
3280.682//	A	1000R	0.00	3.76	½-1½	5^2S-5^2P^o
3382.890	A	1000R	0.00	3.65	½- ½	(1)
8273.519	A	1000	3.76	5.25	1½- ½	5^2P^o-8^2S
7887.779	A	500	3.65	5.25	½- ½	(2)

Ag II See introduction

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cd I I P 8.96 Anal A List D Aug 1942						
3261.050	A	10R	0.00	3.78	0-1	$5^1S-5^3P^o$ (1)
5085.824	A	100R	3.93	6.36	2-1	$5^3P^o-6^3S$ (2)
4799.918	A	100R	3.78	6.36	1-1	
4678.160	A	50	3.72	6.36	0-1	
6438.4696	B	100	5.39	7.31	1-2	$5^1P^o-5^1D$ (3)
Cd II See introduction						
In I I P 5.76 Anal A List D Aug 1942						
4511.310//	A	10	0.27	3.01	1½- ½	$5^2P^o-6^2S$ (1)
4101.764	A	10	0.00	3.01	½- ½	
In II See introduction						
Sn I I P 7.30 Anal A List D Aug 1942						
3009.136	A	700R	0.21	4.31	1-1	$5p^3P-6s^3P^o$ † (1)
3175.046//	A	2000R	0.42	4.31	2-1	
3034.120	A	900R	0.21	4.28	1-0	
3330.620	A	500r	1.06	4.77	2-2	$5p^1D-6s^3P^o$ (2)
3801.022	A	2000R	1.06	4.31	2-1	
3262.340	A	2500R	1.06	4.85	2-1	$5p^1D-6s^1P^o$ (3)
5631.707	A	500	2.12	4.31	0-1	$5p^1S-6s^3P^o$ (4)
4524.744	A	1000	2.12	4.85	0-1	$5p^1S-6s^1P^o$ (5)
Sn II I P 14.57 Anal A List D Aug 1942						
6453.50	A	70	7.02	8.93	½-1½	$6^2S-6^2P^o$ (1)
6844.05	A	25	7.02	8.83	½- ½	
3351.97	A	60	7.34	11.02	2½-3½	$p^2\ ^2D-4^2F^o$ (2)
3263.21	A	50	7.26	11.02	1½-2½	
Sb I I P 8.64 Anal A List D Sept 1942						
3347.10	A	5	2.28	5.97	1½-2½	$5p^2P^o-6s^4P$ (1)
3383.15	A	100	2.02	5.67	½-1½	
3637.83	A	250	2.28	5.67	1½-1½	
3722.79	A	200r	2.02	5.34	½- ½	
4033.55	A	200	2.28	5.34	1½- ½	
3232.52	A	600r	2.28	6.10	1½-1½	$5p^2P^o-6s^2P$ (2)
3267.51	A	700r	2.02	5.80	½- ½	
3504.48	A	50	2.28	5.80	1½- ½	
3029.83	A	500r	2.02	6.10	½-1½	
Sb II See introduction						
Te I I P 8.96 Anal B List D June 1943						
9722.88	A	100	5.46	6.73	2-3	$6^5S^o-6^5P$ (1)
10051.55	A	50	5.46	6.69	2-2	
10091.12	A	25	5.46	6.69	2-1	
I I See introduction						
I II See introduction						
Xe I See introduction						
Xe II See introduction						

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Cs I I P 3.88 Anal A List D Nov 1942						
8521.10 //	A	4000R	0.00	1.45	½-1½	$6^2S-6^2P^o$ (1)
8943.50	A	2000R	0.00	1.38	½- ½	
4555.421	B	(2000R)	0.00	2.71	½-1½	$6^2S-7^2P^o$ (2)
4593.195	B	(1000R)	0.00	2.69	½- ½	
Cs II See introduction						
Ba I I P 5.19 Anal A List C Nov 1942						
7911.338	A	(200)	0.00	1.56	0-1	$6^1S-6^3P^o$ (1)
5535.484//	A	1000R	0.00	2.23	0-1	$6^1S-6^1P^o$ (2)
3501.107	A	200R	0.00	3.53	0-1	$6^1S-5d6p^1P^o$ (3)
3071.583	A	100R	0.00	4.02	0-1	$6^1S-7^1P^o$ (4)
7059.941	A	(2000)	1.18	2.93	3-4	$5^3D-5d6p^3F^o$ † (5)
7380.298	A	(1000)	1.14	2.83	2-3	
7672.092	A	(600)	1.13	2.72	1-2	
7488.083	A	(200)	1.18	2.83	3-3	
7780.479	A	(400)	1.14	2.72	2-2	
6498.759	A	300r	1.18	3.08	3-3	$5^3D-5d6p^3D^o$ (6)
6527.312	A	250	1.14	3.03	2-2	
6595.326	A	200	1.13	2.99	1-1	
6693.842	A	70	1.18	3.03	3-2	
6675.271	A	80	1.14	2.99	2-1	
6341.682	A	150	1.14	3.08	2-3	
6450.854	A	125	1.13	3.03	1-2	
6110.784	A	300r	1.18	3.20	3-2	$5^3D-5d6p^3P^o$ † (7)
6063.117	A	200	1.14	3.17	2-1	
6019.470	A	100	1.13	3.17	1-0	
5971.699	A	100	1.14	3.20	2-2	
5997.088	A	100	1.13	3.17	1-1	
3993.401	A	80	1.18	4.28	3-4	$5^3D-4^3F^o$ (8)
3935.717	A	50	1.14	4.27	2-3	
3909.910	A	40	1.13	4.27	1-2	
3995.656	A	30	1.18	4.27	3-3	
3937.870	A	20	1.14	4.27	2-2	
5777.622	A	400r	1.67	3.80	2-3	$6^3P^o-6^3D$ † (9)
5519.047	A	200	1.56	3.80	1-2	
5424.551	A	100	1.51	3.79	0-1	
5800.229	A	100	1.67	3.80	2-2	
7905.751	A	500	1.67	3.33	2-1	$6^3P^o-7^3S$ (10)
7392.411	A	400	1.56	3.33	1-1	
7195.235	A	200	1.51	3.33	0-1	
Ba II I P 9.96 Anal A List B Nov 1942						
4554.033//	A	1000R	0.00	2.71	½-1½	$6^2S-6^2P^o$ (1)
4934.086	B	700R	0.00	2.50	½- ½	
6141.718	A	600r	0.70	2.71	2½-1½	$5^2D-6^2P^o$ (2)
6496.896	A	600r	0.60	2.50	1½- ½	
5853.675	A	200	0.60	2.71	1½-1½	
4899.934	A	35	2.71	5.23	1½- ½	$6^2P^o-7^2S$ (3)
4524.928	A	35	2.50	5.23	½- ½	
4130.648	A	80	2.71	5.70	1½-2½	$6^2P^o-6^2D$ (4)
3891.781	A	50	2.50	5.67	½-1½	
4166.003	A	20	2.71	5.67	1½-1½	
8710.82	C	(3n)	5.70	7.11	2½-3½	$6^2D-5^2F^o$ (5)
8737.74	C	(3n)	5.67	7.08	1½-2½	
5391.60	D	(10)	5.70	7.99	2½-3½	$6^2D-6^2F^o$ (6)
5361.35	D	(8)	5.67	7.97	1½-2½	
5421.05	D	(2)	5.70	7.97	2½-2½	
4326.74	D	(2)	5.70	8.55	2½-3½	$6^2D-7^2F^o$ (7)
4297.60	D	(2)	5.67	8.54	1½-2½	
6874.09	D	(10)	5.99	7.78	3½-	$4^2F^o-5^2G$ (8)
6769.62	D	(10)	5.96	7.78	2½-	
5480.30	D	(3)	5.99	8.24	3½-2½	$4^2F^o-8^2D$ (9)
5428.79	D	(2)	5.96	8.23	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ba II continued						
5013.00	D	(10)	5.99	8.45	3½-	$4^2F^o-6^2G$ (10)
4957.15	D	(10)	5.96	8.45	2½-	
4309.32	D	(8)	5.99	8.85	3½-	$4^2F^o-7^2G$ (11)
4267.95	D	(8)	5.96	8.85	2½-	
6378.91	D	(5)	6.17	8.11	1½- ½	$7^2P^o-9^2S$ (12)
6135.83	D	(4)	6.10	8.11	½- ½	
5981.25	D	(8)	6.17	8.24	1½-2½	$7^2P^o-8^2D$ (13)
5784.18	D	(8)	6.10	8.23	½-1½	
5999.85	D	(3)	6.17	8.23	1½-1½	
4997.81	D	(3)	6.17	8.64	1½- ½	$7^2P^o-10^2S$ (14)
4847.14	D	(3)	6.10	8.64	½- ½	
4843.46	D	(8)	6.17	8.72	1½-2½	$7^2P^o-9^2D$ (15)
4708.94	D	(8)	6.10	8.72	½-1½	
4850.84	D	(2)	6.17	8.72	1½-1½	
4405.23	D	(4)	6.17	8.98	1½- ½	$7^2P^o-11^2S$ (16)
4287.80	D	(3)	6.10	8.98	½- ½	
4325.73	D	(6)	6.17	9.03	1½-2½	$7^2P^o-10^2D$ (17)
4216.04	D	(5)	6.10	9.02	½-1½	
4329.62	D	(3)	6.17	9.02	1½-1½	
La I I P 5.59 Anal A List C Nov 1942						
6455.99	A	300	0.13	2.04	2½-3½	$a^2D-z^2F^o$ (1)
6578.51	A	400	0.00	1.88	1½-2½	
7068.37	A	100	0.13	1.88	2½-2½	
5930.61	A	(200)	0.13	2.21	2½-3½	$a^2D-y^2F^o$ (2)
5930.68	A	(100)	0.00	2.08	1½-2½	
6325.90	A	150	0.13	2.08	2½-2½	
5455.14	A	400	0.13	2.39	2½-3½	$a^2D-y^2D^o$ † (3)
5501.34	A	300	0.00	2.24	1½-1½	
5271.18	A	150	0.13	2.47	2½-1½	$a^2D-y^2P^o$ † (4)
4949.76	A	200	0.00	2.49	1½- ½	
4280.27	A	100	0.13	3.01	2½-3½	$a^2D-w^2F^o$ † (5)
4187.31	A	125	0.00	2.95	1½-2½	
6709.49	A	200	0.37	2.21	2½-3½	$a^4F-y^2F^o$ † (6)
7045.96	A	300d?	0.33	2.08	1½-2½	
6249.92 //	A	500	0.51	2.48	4½-5½	$a^4F-z^4G^o$ † (7)
6394.23	A	600	0.43	2.36	3½-4½	
6410.98	A	300	0.37	2.30	2½-3½	
6543.17	A	500d	0.33	2.22	1½-2½	
5791.32	A	400d?	0.51	2.64	4½-4½	$a^4F-y^4F^o$ † (8)
5789.22	A	250d?	0.43	2.56	3½-3½	
5769.32	A	80	0.37	2.51	2½-2½	
5740.65	A	100	0.33	2.48	1½-1½	
5211.85	A	300d	0.51	2.88	4½-3½	$a^4F-y^4D^o$ † (9)
5177.30	A	300d	0.43	2.82	3½-2½	
5145.42	A	200	0.37	2.77	2½-1½	
5106.23	A	150d	0.33	2.75	1½- ½	
5234.27	A	300d	0.51	2.87	4½-3½	a^4F-1^o † (10)
4570.02	A	250	0.51	3.21	4½-4½	$a^4F-x^4F^o$ † (11)
4567.90	A	200	0.43	3.13	3½-3½	
4549.50	A	50	0.37	3.08	2½-2½	
4494.71	A	30	0.33	3.08	1½-1½	
La II I P 11.38 Anal A List B Nov 1942						
7282.36	A	150	0.24	1.94	4-4	$a^3F-z^3F^o$ † (1)
7483.48	A	30	0.13	1.77	3-3	
7066.24	A	300	0.00	1.75	2-2	
6808.88	A	30	0.13	1.94	3-4	
6954.54	A	20	0.00	1.77	2-3	
6774.28	A	100	0.13	1.95	3-3	$a^3F-z^1F^o$ † (2)
6834.07	A	20	0.24	2.05	4-4	$a^3F-z^1G^o$ † (3)
5797.57	A	150	0.24	2.37	4-4	$a^3F-y^3F^o$ (4)
5805.77	A	120	0.13	2.25	3-3	
5808.31	A	60	0.00	2.12	2-2	
6146.53	A	15	0.24	2.25	4-3	
6172.72	A	10	0.13	2.12	3-2	
5493.45	A	20	0.13	2.37	3-4	
5482.27	A	40	0.00	2.25	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
La II continued						
6305.46	A	10	0.24	2.20	4-4	a^3F-z^3H^o (5)
5290.83	A	50	0.00	2.33	2-2	a^3F-z^1D^o † (6)
4931.80	A	300	0.24	2.75	4-5	a^3F-z^3G^o (7)
4930.98	A	300	0.13	2.63	3-4	
4899.92	A	200	0.00	2.52	2-3	
5163.61	A	40	0.24	2.83	4-4	
5156.74	A	40	0.13	2.52	3-3	
5423.82	A	4	0.24	2.52	4-3	
4860.90	A	80	0.24	2.78	4-3	a^3F-z^3D^o (8)
4740.27	A	120	0.13	2.73	3-2	
4662.51	A	200	0.00	2.85	2-1	
4645.28	A	100	0.13	2.78	3-3	
*4522.37	A	400	0.00	2.73	2-2	
4435.84	A	10	0.00	2.78	2-3	
4300.44	A	60	0.00	2.87	2-2	a^3F-z^3P^o † (9)
4088.72	A	300	0.00	3.02	2-2	a^3F-y^1D^o (10)
4432.95	A	20?	0.24	3.03	4-3	a^3F-y^1F^o †
4076.71	A	40	0.00	3.03	2-3	(11)
3794.78	A	400	0.24	3.50	4-3	a^3F-y^3D^o
3790.83	A	300	0.13	3.38	3-2	(12)
3849.02	A	100	0.00	3.21	2-1	
3862.08	A	30	0.13	3.50	3-3	
3650.19	A	80	0.00	3.38	2-2	
3530.67	A	8	0.00	3.50	2-3	
3759.08	A	300	0.24	3.53	4-4	a^3F-x^3F^o
3871.64	A	200	0.13	3.31	3-3	(13)
3784.81	A	15	0.00	3.26	2-2	
3936.22	A	50	0.13	3.26	3-2	
3628.83	A	60	0.13	3.53	3-4	
3725.05	A	20	0.00	3.31	2-3	
3645.43	A	200	0.00	3.39	2-1	a^3F-z^1P^o (14)
3510.00	A	15	0.13	3.64	3-2	a^3F-y^3P^o
3550.82	A	6	0.00	3.48	2-1	(15)
3108.46	A	8	0.00	3.97	2-1	a^3F-x^3P^o (16)
3306.98	A	8	0.24	3.98	4-3	a^3F-x^1F^o †
3104.58	A	50	0.00	3.98	2-3	(17)
6952.52	A	10	0.17	1.95	2-3	a^1D-z^1F^o (18)
5936.22	A	20	0.17	2.25	2-3	a^1D-y^3F^o
8320.39	A	200	0.17	2.12	2-2	(19)
5712.39	A	20	0.17	2.33	2-2	a^1D-z^1D^o (20)
5259.38	A	50	0.17	2.52	2-3	a^1D-z^3G^o (21)
4728.41	A	100	0.17	2.78	2-3	a^1D-z^3D^o
4828.87	A	20	0.17	2.73	2-2	(22)
4988.82	A	100	0.17	2.85	2-1	
4574.87	A	200	0.17	2.87	2-2	a^1D-z^3P^o
4691.17	A	50	0.17	2.80	2-1	(23)
4333.76	A	500	0.17	3.02	2-2	a^1D-y^1D^o (24)
4322.51	A	100	0.17	3.03	2-3	a^1D-y^1F^o (25)
3713.54	A	100	0.17	3.50	2-3	a^1D-y^3D^o
3846.00	A	20	0.17	3.38	2-2	(26)
4067.39	A	100	0.17	3.21	2-1	
3929.22	A	300	0.17	3.31	2-3	a^1D-x^3F^o
3995.74	A	400	0.17	3.26	2-2	(27)
3840.72	A	60	0.17	3.39	2-1	a^1D-z^1P^o (28)
3557.26	A	8	0.17	3.64	2-2	a^1D-y^3P^o
3735.85	A	10	0.17	3.48	2-1	(29)
3452.18	A	40	0.17	3.75	2-1	a^1D-y^1P^o (30)
3142.76	A	40	0.17	4.10	2-2	a^1D-x^3P^o
3249.35	A	80	0.17	3.97	2-1	(31)
3245.13	A	150	0.17	3.98	2-3	a^1D-x^1F^o (32)
6262.30	A	300	0.40	2.37	3-4	a^3D-y^3F^o
8390.48	A	200	0.32	2.25	2-3	(33)
8526.99	A	200	0.23	2.12	1-2	
6871.41	A	40	0.40	2.25	3-3	
8837.91	A	15	0.32	2.12	2-2	
6859.03	A	5	0.40	2.20	3-4	a^3D-z^3H^o (34)
5880.63	A	50	0.23	2.33	1-2	a^3D-z^1D^o † (35)
5183.42	A	400	0.40	2.78	3-3	a^3D-z^3D^o
5122.99	A	200	0.32	2.73	2-2	(36)
5114.55	A	200	0.23	2.65	1-1	
5301.97	A	200	0.40	2.73	3-2	
5303.54	A	100	0.32	2.65	2-1	
4946.47	A	50	0.23	2.73	1-2	
4999.46	A	200	0.40	2.87	3-2	a^3D-z^3P^o
4970.39	A	100	0.32	2.80	2-1	(37)
4809.00	A	100	0.23	2.80	1-0	
4840.02	A	30	0.32	2.87	2-2	
4804.04	A	80	0.23	2.80	1-1	
4682.12	A	5	0.23	2.87	1-2	
4712.92	A	40	0.40	3.02	3-2	a^3D-y^1D^o
4570.97	A	10	0.32	3.02	2-2	(38)
4439.90	A	400	0.23	3.02	1-2	
4699.62	A	50	0.40	3.03	3-3	a^3D-y^1F^o
4558.46	A	200	0.32	3.03	2-3	(39)
3988.51	A	500	0.40	3.50	3-3	a^3D-y^3D^o
4031.68	A	300	0.32	3.38	2-2	(40)
4151.98	A	250	0.23	3.21	1-1	
4141.73	A	200	0.40	3.38	3-2	
4275.64	A	100	0.32	3.21	2-1	
3886.37	A	150	0.32	3.50	2-3	
3921.54	A	200	0.23	3.38	1-2	
3949.10 //	A	600	0.40	3.53	3-4	a^3D-x^3F^o
4123.23	A	400	0.32	3.31	2-3	(41)
4077.35	A	300	0.23	3.26	1-2	
4238.38	A	400	0.40	3.31	3-3	
4196.55	A	250	0.32	3.26	2-2	
4315.90	A	30	0.40	3.26	3-2	
4025.87	A	50	0.32	3.39	2-1	a^3D-z^1P^o
3916.05	A	300	0.23	3.39	1-1	(42)
3808.79	A	15	0.40	3.64	3-2	a^3D-y^3P^o †
3910.81	A	10 l	0.32	3.48	2-1	(43)
3715.53	A	50	0.32	3.64	2-2	
3601.07	A	20nl	0.32	3.75	2-1	a^3D-y^1P^o
3512.93	A	10	0.23	3.75	1-1	(44)
3337.49	A	300	0.40	4.10	3-2	a^3D-x^3P^o
3380.91	A	300	0.32	3.97	2-1	(45)
3344.56	A	200	0.23	3.92	1-0	
3265.67	A	600	0.32	4.10	2-2	
3303.11	A	150	0.23	3.97	1-1	
3193.02	A	25	0.23	4.10	1-2	
3453.17	A	50	0.40	3.98	3-3	a^3D-x^1F^o
3376.33	A	50	0.32	3.98	2-3	(46)
6139.57	A	50	0.77	2.78	2-3	a^3P-z^3D^o
6100.37	A	30	0.71	2.73	1-2	(47)
6174.15	A	6	0.65	2.65	0-1	
*8296.08	A	300	0.77	2.73	2-2	
6358.12	A	30	0.71	2.65	1-1	
6570.96	A	?	0.77	2.65	2-1	
5874.00	A	6	0.77	2.87	2-2	a^3P-z^3P^o †
6067.13	A	6	0.77	2.80	2-1	(48)
5892.66	A	4	0.71	2.80	1-0	
5703.32	A	20	0.71	2.87	1-2	
5727.29	A	20	0.65	2.80	0-1	
5464.37	A	25	0.77	3.03	2-3	a^3P-y^1F^o (49)
4526.12	A	200	0.77	3.50	2-3	a^3P-y^3D^o
4613.38	A	200	0.71	3.38	1-2	(50)
4824.05	A	100	0.65	3.21	0-1	
4734.42	A	40	0.77	3.38	2-2	
4935.61	A	10	0.71	3.21	1-1	
5062.91	A	20	0.77	3.21	2-1	
*4850.58	A	30	0.77	3.31	2-3	a^3P-x^3F^o
4830.51	A	10	0.71	3.26	1-2	(51)
4716.44	A	80	0.77	3.39	2-1	a^3P-z^1P^o
4605.78	A	100	0.71	3.39	1-1	(52)
4508.48	A	10	0.65	3.39	0-1	
4296.05	A	300	0.77	3.64	2-2	a^3P-y^3P^o
4455.79	A	50	0.71	3.48	1-1	(53)
4559.28	A	100	0.77	3.48	2-1	
4580.05	A	150	0.71	3.40	1-0	
4204.03	A	100	0.71	3.64	1-2	
4364.66	A	100	0.65	3.48	0-1	
4143.77	A	15	0.77	3.75	2-1	a^3P-y^1P^o
4058.08	A	5	0.71	3.75	1-1	(54)
3705.81	A	80	0.77	4.10	2-2	a^3P-x^3P^o
3780.67	A	50?	0.71	3.97	1-1	(55)
3854.91	A	30	0.77	3.97	2-1	
3835.09	A	50	0.71	3.92	1-0	
3637.15	A	40	0.71	4.10	1-2	
3714.87	A	40	0.65	3.97	0-1	
5380.97	A	100	0.91	3.21	0-1	a^1S-y^3D^o (56)
4991.27	A	80	0.91	3.39	0-1	a^1S-z^1P^o (57)
4354.40	A	200	0.91	3.75	0-1	a^1S-y^1P^o (58)
4036.59	A	15d	0.91	3.97	0-1	a^1S-x^3P^o (59)
9657.00	A	20	0.92	2.20	4-4	a^1G-z^3H^o (60)
6636.53	A	5	0.92	2.78	4-3	a^1G-z^3D^o (61)
5863.70	A	80	0.92	3.03	4-3	a^1G-y^1F^o (62)
4796.67	A	25	0.92	3.50	4-3	a^1G-y^3D^o (63)
4739.80	A	15	0.92	3.53	4-4	a^1G-x^3F^o † (64)
4748.73	A	150	0.92	3.52	4-5	a^1G-z^1H^o (65)
4042.91	A	300	0.92	3.98	4-3	a^1G-x^1F^o (66)
6958.11	A	100	1.25	3.02	2-2	b^1D-y^1D^o (67)
5486.86	A	5	1.25	3.50	2-3	b^1D-y^3D^o †
*6296.08	A	300	1.25	3.21	2-1	(68)
5971.09	A	8	1.25	3.31	2-3	b^1D-x^3F^o
6126.09	A	50	1.25	3.26	2-2	(69)
5769.06	A	60	1.25	3.39	2-1	b^1D-z^1P^o (70)
5535.66	A	80	1.25	3.48	2-1	b^1D-y^3P^o † (71)
4934.83	A	100	1.25	3.75	2-1	b^1D-y^1P^o (72)
4530.54	A	15	1.25	3.97	2-1	b^1D-x^3P^o (73)
*4522.37	A	400	1.25	3.98	2-3	b^1D-x^1F^o (74)
4286.97	A	300	1.94	4.82	4-5	z^3F^o-e^3G †
4385.20	A	40	1.77	4.59	3-4	(75)
4692.50	A	200	1.75	4.38	2-3	
4655.49	A	400	1.94	4.59	4-4	
4743.08	A	250	1.77	4.38	3-3	
4525.31	A	100	1.94	4.67	4-4	z^3F^o-e^3F
4427.52	A	100	1.77	4.56	3-3	(76)
4619.87	A	300	1.75	4.42	2-2	
4703.27	A	150	1.94	4.56	4-3	
4668.91	A	250	1.77	4.42	3-2	
4269.50	A	300	1.77	4.67	3-4	
4383.44	A	100	1.75	4.56	2-3	
4647.50	A	100	1.94	4.59	4-3	z^3F^o-e^1F
4378.10	A	50	1.77	4.59	3-3	(77)
4334.96	A	100	1.75	4.59	2-3	
4217.56	A	200	1.94	4.86	4-3	z^3F^o-e^3D †
4192.35	A	100	1.77	4.72	3-2	(78)
4099.54	A	150	1.75	4.76	2-1	
3994.50	A	10	1.77	4.86	3-3	
4152.78	A	100	1.75	4.72	2-2	
4249.99	A	100	1.94	4.84	4-4	z^3F^o-e^1G
4023.58	A	40	1.77	4.84	3-4	(79)
4671.82	A	200	1.95	4.59	3-4	z^1F^o-e^3G
5080.21	A	40	1.95	4.38	3-3	(80)
4540.71	A	10	1.95	4.67	3-4	z^1F^o-e^3F †
4719.93	A	150	1.95	4.56	3-3	(81)
4663.76	A	300	1.95	4.59	3-3	z^1F^o-e^1F (82)
4230.95	A	150	1.95	4.86	3-3	z^1F^o-e^3D (83)
4263.59	A	200	1.95	4.84	3-4	z^1F^o-e^1G (84)
4050.08	A	200	1.95	4.99	3-2	z^1F^o-e^1D (85)
4859.18	A	5n	2.05	4.59	4-4	z^1G^o-e^3G †
5302.62	A	150	2.05	4.38	4-3	(86)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
La II continued						
4717.58	A	50	2.05	4.67	4-4	z^1G^o-e^3F
4911.34	A	10	2.05	4.56	4-3	(87)
*4850.58	A	30	2.05	4.59	4-3	z^1G^o-e^1F (88)
4419.16	A	30	2.05	4.84	4-4	z^1G^o-e^1G (89)
5048.04	A	30 l	2.37	4.82	4-5	y^3F^o-e^3G
5279.11	A	40	2.25	4.59	3-4	(90)
5480.72	A	25	2.12	4.38	2-3	
5566.92	A	40	2.37	4.59	4-4	
5806.56	A	8	2.25	4.38	3-3	
5381.77	A	50	2.37	4.67	4-4	y^3F^o-e^3F†
5340.66	A	100	2.25	4.56	3-3	(91)
5381.91	A	100	2.12	4.43	2-2	
4952.06	A	40	2.37	4.86	4-3	y^3F^o-e^3D†
5002.12	A	40	2.25	4.73	3-2	(92)
4688.65	A	40	2.12	4.76	2-1	
4996.82	A	50	2.37	4.84	4-4	y^3F^o-e^1G (93)
4498.76	A	10	2.25	4.99	3-2	y^3F^o-e^1D (94)
5188.21	A	500	2.44	4.82	6-5	z^3H^o-e^3G
5377.08	A	200	2.29	4.59	5-4	(95)
5671.54	A	100	2.20	4.38	4-3	
4891.43	A	10	2.29	4.82	5-5	
5167.28	A	10	2.20	4.59	4-4	
5204.14	A	300	2.29	4.67	5-4	z^3H^o-e^3F
5226.20	A	40 l	2.20	4.56	4-3	(96)
5157.43	A	150	2.20	4.59	4-3	z^3H^o-e^1F (97)
4843.29	A	5	2.29	4.84	5-4	z^3H^o-e^1G (98)
5458.68	A	50	2.33	4.59	2-3	z^1D^o-e^1F (99)
5172.89	A	20 l	2.33	4.73	2-2	z^1D^o-e^3D†
5090.56	A	20 l	2.33	4.76	2-1	(100)
4636.42	A	80	2.33	4.99	2-2	z^1D^o-e^1D (101)
3007.32	A	5	2.33	6.44	2-3	z^1D^o-f^1F (102)
5973.52	A	120 l	2.75	4.82	5-5	z^3G^o-e^3G†
6310.91	A	200	2.63	4.59	4-4	(103)
6642.79	A	100	2.52	4.38	3-3	
6714.08	A	80	2.75	4.59	5-4	
5652.3	A	10 n	2.63	4.82	4-5	
6446.62	A	200	2.75	4.67	5-4	z^3G^o-e^3F†
6399.04	A	400	2.63	4.56	4-3	(104)
6498.19	A	250	2.52	4.43	3-2	
5948.30	A	20	2.52	4.59	3-3	z^3G^o-e^1F (105)
5532.17	A	10	2.63	4.86	4-3	z^3G^o-e^3D
5610.53	A	20	2.52	4.73	3-2	(106)
5901.95	A	40 l	2.75	4.84	5-4	z^3G^o-e^1G (107)
6830.83	A	6	2.78	4.59	3-4	z^3D^o-e^3G† (108)
6554.18	A	?	2.78	4.67	3-4	z^3D^o-e^3F
6732.80	A	40	2.73	4.56	3-3	(109)
6968.78	A	25	2.65	4.42	1-2	
6813.68	A	50	2.78	4.59	3-3	z^3D^o-e^1F† (110)
5927.71	A	30	2.78	4.86	3-3	z^3D^o-e^3D†
6203.51	A	50 l	2.73	4.72	2-2	(111)
5848.95	A	20	2.65	4.76	1-1	
6374.08	A	30	2.78	4.72	3-2	
6085.43	A	10	2.73	4.76	2-1	
5447.59	A	10	2.73	4.99	2-2	z^3D^o-e^1D† (112)
3484.39	A	10 l	2.78	6.32	3-3	z^3D^o-f^3D†
3432.81	A	5	2.73	6.32	2-3	(113)
3209.13	A	6	2.78	6.63	3-3	z^3D^o-g^3D†
3263.98	A	5	2.73	6.51	2-2	(114)
3253.41	A	10n	2.65	6.44	1-1	
La II continued						
3049.39	A	5	2.78	6.83	3-4	z^3D^o-f^3F†
3054.02	A	6	2.73	6.77	2-3	(115)
3081.42	A	6n	2.65	6.65	1-2	
3022.36	A	5nl	2.73	6.81	2-2	z^3D^o-g^1D (116)
6188.09	A	100 l	2.87	4.86	2-3	z^3P^o-e^3D†
6443.05	A	50 n	2.80	4.72	1-2	(117)
6307.25	A	20 n	2.80	4.76	0-1	
6315.79	A	50	2.80	4.76	1-1	
5808.63	A	8	2.87	4.99	2-2	z^3P^o-e^1D (118)
3460.31	A	5 l	2.87	6.44	2-3	z^3P^o-f^1F (119)
3283.95	A	8 n	2.87	6.63	2-3	z^3P^o-g^3D†
3329.07	A	8	2.80	6.51	1-2	(120)
3326.31	A	5	2.87	6.58	2-1	z^3P^o-e^1P† (121)
3212.56	A	5	2.87	6.71	2-1	z^3P^o-e^3S† (122)
3932.53	A	10 l	3.02	6.16	2-2	y^1D^o-f^3D† (123)
3694.27	A	7 n	3.02	6.36	2-2	y^1D^o-f^1D (124)
3612.34	A	50	3.02	6.44	2-3	y^1D^o-f^1F (125)
3420.54	A	5 n	3.02	6.63	2-3	y^1D^o-g^3D† (126)
3520.72	A	10 nl	3.02	6.53	2-3	y^1D^o-f^3G (127)
3397.77	A	40 nl	3.02	6.65	2-2	y^1D^o-f^3F (128)
6718.68	A	60	3.03	4.86	3-3	y^1F^o-e^3D† (129)
6801.38	A	5	3.03	4.84	3-4	y^1F^o-e^1G (130)
6273.76	A	100	3.03	4.99	3-2	y^1F^o-e^1D (131)
3427.57	A	8	3.03	6.63	3-3	y^1F^o-g^3D (132)
4363.05	A	50 l	3.50	6.32	3-3	y^3D^o-f^3D
4443.94	A	20 nl	3.38	6.16	2-2	(133)
4307.61	A	10 l	3.21	6.14	1-1	
4634.95	A	25 l	3.50	6.16	3-2	
4474.03	A	10	3.38	6.14	2-1	
m4193.37	P	La+	3.38	6.32	2-3	
4180.97	A	12 l	3.21	6.16	1-2	
3939.85	A	20 l	3.50	6.63	3-3	y^3D^o-g^3D†
3816.25	A	10 n	3.21	6.44	1-1	(134)
3925.09	A	5	3.38	6.53	2-3	y^3D^o-f^3G (135)
3701.81	A	40 l	3.50	6.83	3-4	y^3D^o-f^3F†
3641.66	A	50 l	3.38	6.77	2-3	(136)
3581.68	A	20 nl	3.21	6.65	1-2	
3731.42	A	8 n	3.50	6.80	3-4	y^3D^o-e^3H (137)
4411.21	A	25 nl	3.53	6.32	4-3	x^3F^o-f^3D†
4337.78	A	10 l	3.31	6.16	3-2	(138)
4098.73	A	5	3.31	6.32	3-3	
3981.36	A	10 l	3.26	6.36	2-2	x^3F^o-f^1D (139)
3979.08	A	8 l	3.53	6.63	4-3	x^3F^o-g^3D† (140)
3864.49	A	100 l	3.53	6.72	4-5	x^3F^o-f^3G†
3773.12	A	150 l	3.31	6.58	3-4	(141)
3780.53	A	50 ?	3.26	6.53	2-3	
3736.41	A	15 l	3.53	6.83	4-4	x^3F^o-f^3F†
3570.10	A	30 nl	3.31	6.77	3-3	(142)
3474.84	A	8 l	3.26	6.81	2-2	x^3F^o-g^1D† (143)
3433.9	A	5	3.31	6.92	3-4	x^3F^o-f^1G† (144)
2985.43	A	5	3.26	7.39	2-2	x^3F^o-h^1D (145)
4481.21	A	25 nl	3.39	6.14	1-1	z^1P^o-f^3D (146)
3059.91	A	8	3.39	7.42	1-0	z^1P^o-f^3P† (147)
La II continued						
*4600.59	A	5n	3.64 / 3.48	6.32 / 6.16	2-3 / 1-2	y^3P^o-f^3D† (148)
4538.87	A	8nl	3.64	6.36	2-2	y^3P^o-f^1D (149)
4132.50	A	10nl	3.64	6.63	2-3	y^3P^o-g^3D (150)
3767.05	A	5n	3.64	6.92	2-2	y^3P^o-e^3P†
3885.09	A	4	3.64	6.82	2-1	(151)
9346.69	A	15	3.52	4.84	5-4	z^1H^o-e^1G (152)
4880.20	A	10n	4.10	6.63	2-3	x^3P^o-g^3D† (153)
4502.16	A	10nl	3.97	6.71	1-1	x^3P^o-e^3S (154)
3411.76	A	20nl	4.10	7.72	2-2	x^3P^o-f^3P†
3580.10	A	8n	4.10	7.55	2-1	(155)
3578.89	A	5n	3.97	7.42	1-0	
3294.44	A	10	3.97	7.72	1-2	
3407.00	A	8nl	3.92	7.55	0-1	
3217.12	A	8n	4.10	7.94	2-2	x^3P^o-g^3P†
3112.63	A	8n	3.97	7.94	1-2	(156)
3174.88	A	10nl	4.10	7.99	2-3	x^3P^o-h^3D†
3191.39	A	10n	4.10	7.97	2-2	(157)
5173.83	A	25 l	3.98	6.36	3-2	x^1F^o-f^1D (158)
5014.45	A	30nl	3.98	6.44	3-3	x^1F^o-f^1F (159)
4194.36	A	30n	3.98	6.92	3-4	x^1F^o-f^1G (160)
4562.5	A	5n	4.38	7.08	3-3	e^3G-1^o (161)
5066.99	A	20n	4.82	7.25	5-4	e^3G-2^o (162)
4241.20	A	15nl	4.59	7.50	4-4	e^3G-4^o† (163)
5107.54	A	6n	4.67	7.08	4-3	e^3F-1^o (164)
4304.11	A	10nl	4.67	7.53	4-	e^3F-5^o† (165)
4113.28	A	40 l	4.59	7.59	3-	e^1F-6^o (166)
4131.74	A	5n	4.86	7.85	3-	e^3D-7^o (167)
3817.24	A	8n	4.72	7.95	2-3	e^3D-8^o (168)

Strongest Unclassified Lines of La II (Some may be La III)

5217.83	A	10n
4516.38	A	5nl
4210.22	A	50nl
4201.50	A	6n
4193.34	A	5
4161.94	A	8n
4133.33	A	6nl
4007.64	A	7n
3963.04	A	5 l
3962.03	A	10 l
3747.96	A	5 l
3665.22	A	10 l
3610.25	A	30 l
3298.72	A	5 n
3208.13	A	6
3018.95	A	6nl
3004.68	A	5n

La III I P 19.1 Anal C List A Nov 1942

3171.68	A	300	1.68	5.57	$\frac{1}{2}$-$1\frac{1}{2}$ 6^2S-6^2P^o
3517.14	A	200	1.68	5.19	$\frac{1}{2}$- $\frac{1}{2}$ (1)

Ce I No analysis May 1942 (Temperature Class)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II I P ? Anal B List B Dec 1941						
Group I						
4186.599	C	600	0.38	3.33	6½-7½	$a^4H-z^4I^\circ$ (1)
4248.676	C	200	0.20	3.11	5½-6½	
4306.724	C	100	0.04	2.90	4½-5½	
4562.360	A	400	0.00	2.71	3½-4½	
4528.473	A	150	0.38	3.11	6½-6½	
4578.277	A	250	0.20	2.90	5½-5½	
4638.160	A	500	0.04	2.71	4½-4½	
4418.784	A	200	0.38	3.18	6½-6½	$a^4H-z^4H^\circ$ (2)
4382.167	A	200	0.20	3.02	5½-5½	
4296.680	A	200	0.04	2.91	4½-4½	
4460.213	A	400	0.00	2.77	3½-3½	
4680.458	C	(2)	0.38	3.02	6½-5½	
4560.959	C	60	0.20	2.91	5½-4½	
4523.077	A	125	0.04	2.77	4½-3½	
4151.970	C	200	0.20	3.18	5½-6½	
4137.646	C	400	0.04	3.02	4½-5½	
4239.912	A	200	0.00	2.91	3½-4½	
4483.900	A	100	0.38	3.14	6½-5½	$a^4H-z^2H^\circ$ (3)
4450.732	A	75	0.20	2.98	5½-4½	
•4309.409§	A	(25)	0.20	3.14	5½-5½	
4198.724	A	60	0.04	2.98	4½-4½	
3934.46	P		0.04	3.14	4½-5½	
4144.492	A	(10)	0.00	2.98	3½-4½	
•4133.800	C	500	0.38	3.37	6½-5½	$a^4H-z^4G^\circ$ (4)
4127.367	C	150	0.20	3.20	5½-4½	
•4133.800	C	500	0.04	3.02	4½-3½	
4073.477	C	200	0.00	3.03	3½-2½	
4081.222	A	150	0.00	3.02	3½-3½	
4101.772	A	125	0.38	3.39	6½-6½	$a^4H-z^2I^\circ$ (5)
4388.007	A	(8)	0.38	3.20	6½-5½	
4606.402	A	50	0.43	3.11	5½-6½	$a^2H-z^4I^\circ$ (6)
4593.932	A	200	0.22	2.90	4½-5½	
4198.669	A	75	0.43	3.02	5½-5½	$a^2H-z^4H^\circ$ (7)
4582.502	A	(10)	0.22	2.91	4½-4½	
4560.280	A	125	0.43	3.14	5½-5½	$a^2H-z^2H^\circ$ (8)
4471.240	A	200	0.22	2.98	4½-4½	
4844.87	P		0.43	2.98	5½-4½	
4227.746	A	100	0.22	3.14	4½-5½	
4144.995	A	60	0.22	3.20	4½-4½	$a^2H-z^4G^\circ$ (9)
4165.606	C	200	0.43	3.39	5½-6½	$a^2H-z^2I^\circ$ (10)
4142.398	A	150	0.22	3.20	4½-5½	
4461.138	A	50	0.43	3.20	5½-5½	
4285.366	A	30	0.43	3.31	5½-4½	$a^2H-z^2G^\circ$ (11)
4118.144	C	200	0.22	3.21	4½-3½	
3993.822	C	200	0.43	3.52	5½-4½	$a^2H-y^2G^\circ$ (12)
•3918.276	C	200	0.22	3.37	4½-3½	
5330.582	A	25	0.39	2.71	4½-4½	$b^2H-z^4I^\circ$ (13)
5075.304	C	20	0.55	2.98	5½-4½	$b^2H-z^2H^\circ$ (14)
5079.681	C	75	0.90	3.33	8½-7½	$a^4K-z^4I^\circ$ (15)
5187.452	C	60	0.73	3.11	7½-6½	
5274.244	A	75	0.56	2.90	6½-5½	
5353.534	A	50	0.40	2.71	5½-4½	
5044.008	A	35	0.73	3.18	7½-6½	$a^4K-z^4H^\circ$ (16)
5022.871	C	20	0.56	3.02	6½-5½	
4467.537	A	(5)	0.61	3.37	4½-5½	$a^4F-z^4G^\circ$ (17)
4714.83	A	—	0.58	3.20	3½-4½	
4846.574	C	(8)	0.48	3.02	2½-3½	
4773.942	C	50	0.44	3.03	1½-2½	
4680.127	C	25	0.58	3.21	3½-3½	$a^4F-z^2G^\circ$ (18)
4429.270	C	100	0.61	3.39	4½-5½	$a^4F-y^4G^\circ$ (19)
4442.72	P		0.58	3.36	3½-4½	
4078.381	A	60	0.48	3.50	2½-3½	
4444.393	A	60	0.44	3.22	1½-2½	
4491.10	P		0.61	3.36	4½-4½	
4317.591	A	30	0.58	3.50	3½-3½	
4497.849	A	25	0.48	3.22	2½-2½	
4261.164	A	(18)	0.61	3.50	4½-3½	
4463.410	A	60	0.48	3.24	2½-1½	$a^4F-z^4D^\circ$ (20)
4565.842	A	50	0.61	3.52	4½-4½	$a^4F-y^2G^\circ$ (21)
4423.678	A	(25)	0.58	3.37	3½-3½	
4270.716	C	50	0.48	3.37	2½-3½	
4119.784	A	(20)	0.61	3.60	4½-4½	$a^4F-z^4F^\circ$ (22)
4067.279	A	50	0.58	3.61	3½-3½	
4133.488	C	(20)	0.48	3.47	2½-2½	
4115.374	A	150	0.44	3.44	1½-1½	
4161.175	A	(18)	0.48	3.44	2½-1½	
5117.175	A	15	0.92	3.33	7½-7½	$a^4I-z^4I^\circ$ (23)
5265.710	A	15	0.77	3.11	6½-6½	
5409.224	A	80	0.62	2.90	5½-5½	
5668.901	A	40	0.53	2.71	4½-4½	
■5468.37	P	Ce I	0.92	3.18	7½-6½	$a^4I-z^4H^\circ$ (24)
5473.297	C	30	0.77	3.02	6½-5½	
5393.391	A	100	0.62	2.91	5½-4½	
5512.085	C	150	0.53	2.77	4½-3½	
3360.541	A	75	0.92	4.59	7½-7½	$a^4I-y^4I^\circ$ (25)
3334.455	A	60	0.77	4.47	6½-6½	
3312.315	A	50	0.62	4.35	5½-5½	
3325.339	A	50	0.53	4.24	4½-4½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
5518.491	A	10	0.67	2.91	3½-4½	$a^4G-z^4H^\circ$
5610.257	C	20	0.57	2.77	2½-3½	(26)
4624.899	A	60	0.64	3.31	3½-4½	$a^2F-z^2G^\circ$ (27)
4148.901	A	(25)	0.61	3.58	2½-2½	$a^2F-z^2D^\circ$ (28)
4167.804	A	(12)	0.64	3.60	3½-4½	$a^2F-z^2F^\circ$
4110.381	A	80	0.61	3.61	2½-3½	(29)
4155.532	A	(6)	0.64	3.61	3½-3½	
6035.487	C	(4)	1.13	3.18	6½-6½	$b^4H-z^4H^\circ$ †
6034.204	C	(4)	0.98	3.02	5½-5½	(30)
5975.830	A	20	0.85	2.91	4½-4½	
6043.386	A	60	0.72	2.77	3½-3½	
4893.968	C	15	0.85	3.37	4½-3½	$b^4H-y^2G^\circ$ (31)
5613.698	A	(5)	0.94	3.14	6½-5½	$a^2I-z^2H^\circ$
5768.895	C	20	0.84	2.98	5½-4½	(32)
4410.641	C	30	0.87	3.66	4½-3½	$a^2G-y^2F^\circ$ (33)
4339.317	A	30	0.87	3.71	4½-4½	$a^2G-x^2G^\circ$
4062.223	A	60	0.88	3.92	3½-3½	(34)
4117.013	C	75	0.87	3.86	4½-5½	$a^2G-y^2H^\circ$
4163.516	A	(20)	0.88	3.85	3½-4½	(35)
Ce II Group II See Introduction						
3562.091	A	(6)	(0.52	3.98)	6½-7½	$a^4H^\circ-z^4I$ †
4053.506	A	100	(0.00	3.04)	3½-4½	(36)
3848.597	C	150	(0.52	3.73)	6½-6½	
4080.435	B	(5)	(0.36	3.38)	5½-5½	
4222.599	A	300	(0.12	3.04)	4½-4½	
3718.380	C	200	(0.52	3.84)	6½-5½	$a^4H^\circ-z^4G$ †
3803.097	A	200	(0.36	3.60)	5½-4½	(37)
3815.831	C	250	(0.12	3.36)	4½-3½	
3942.151	B	125	(0.00	3.13)	3½-2½	
3653.108	A	125	(0.36	3.73)	5½-4½	$a^4H^\circ-z^4F$
3668.719	A	(12)	(0.00	3.36)	3½-2½	(38)
3853.164	A	125	(0.00	3.20)	3½-3½	$a^4H^\circ-z^2G$ (39)
3709.286	A	400	(0.52	3.85)	6½-6½	$a^4H^\circ-z^4H$ †
3667.981	A	400	(0.36	3.72)	5½-5½	(40)
3709.933	A	500	(0.12	3.45)	4½-4½	
3716.365	A	600	(0.00	3.32)	3½-3½	
3764.117	A	150	(0.36	3.63)	5½-5½	$a^4H^\circ-y^2H$ (41)
3660.641	C	250	(0.12	3.49)	4½-3½	$a^4H^\circ-116$ †
3927.383	B	(4)	(0.36	3.50)	5½-4½	(42) $a^4H^\circ-x^2H$ (43)
3534.051	C	300	(0.52	4.01)	6½-5½	$a^4H^\circ-y^4G$
3545.603	B	(3)	(0.36	3.84)	5½-4½	(44)
3426.208	C	250	(0.12	3.72)	4½-3½	
3485.054	C	400	(0.00	3.54)	3½-2½	
3441.210	C	150	(0.36	3.94)	5½-4½	$a^4H^\circ-159$ (45)
3393.920	C	50	(0.52	4.16)	6½-6½	$a^4H^\circ-z^2I$
3142.312	A	(25)	(0.12	4.05)	4½-5½	(46)
3728.423	A	250	(0.67	3.98)	7½-7½	$a^4I^\circ-z^4I$ †
3788.753	A	75	(0.47	3.73)	6½-6½	(47)
4028.411	A	150	(0.32	3.38)	5½-5½	
4299.362	B	60	(0.17	3.04)	4½-4½	
3757.863	A	(15)	(0.32	3.60)	5½-4½	$a^4I^\circ-z^4G$
3878.372	A	150	(0.17	3.38)	4½-3½	(48)
4084.491	C	60	(0.47	3.53)	6½-5½	$a^4I^\circ-z^2H$
3834.556	B	100	(0.32	3.53)	5½-5½	(49)
3931.088	A	125	(0.17	3.31)	4½-4½	
•3672.166§	B	(5d)	(0.17	3.53)	4½-5½	
3889.990	C	300	(0.67	3.85)	7½-6½	$a^4I^\circ-z^4H$
3795.856	C	(5)	(0.47	3.72)	6½-5½	(50)
3940.338	B	100	(0.32	3.45)	5½-4½	
3922.005	C	(2s)	(0.17	3.32)	4½-3½	
3653.670	C	250	(0.47	3.85)	6½-6½	
3769.046	B	(5)	(0.17	3.45)	4½-4½	
3560.798	C	500	(0.67	4.14)	7½-6½	$a^4I^\circ-y^4H$
3577.458	C	500	(0.47	3.92)	6½-5½	(51)
3698.650	B	(5)	(0.32	3.69)	5½-4½	
3786.632	B	150	(0.17	3.43)	4½-3½	
3426.583	B	(4)	(0.32	3.92)	5½-5½	
3507.945	A	125	(0.17	3.69)	4½-4½	
3655.851	A	500	(0.32	3.69)	5½-4½	
3898.273	C	100	(0.47	3.63)	6½-5½	$a^4I^\circ-y^2H$ †
3719.797	A	(15)	(0.32	3.63)	5½-5½	(52)
3718.190	B	150	(0.17	3.49)	4½-3½	$a^4I^\circ-116$ (53)
3659.227	A	125	(0.17	3.55)	4½-3½	$a^4I^\circ-123$ (54)
3520.532	A	150	(0.17	3.68)	4½-3½	$a^4I^\circ-132$ (55)
3448.731	A	(15)	(0.32	3.90)	5½-4½	$a^4I^\circ-156$ (56)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
3942.746	C	150	(0.85	3.98)	6½-7½	$b^4H^\circ-z^4I$
4075.714	C	150	(0.70	3.73)	5½-6½	(57)
3999.242	B	500	(0.29	3.38)	4½-5½	
4386.835	A	(15)	(0.23	3.04)	3½-4½	
4296.786	A	(5)	(0.85	3.73)	6½-6½	
4486.909	A	150	(0.29	3.04)	4½-4½	
4242.723	A	(15)	(0.29	3.20)	4½-3½	$b^4H^\circ-z^2G$ (58)
4349.789	A	100	(0.70	3.53)	5½-5½	$b^4H^\circ-z^2H$
4087.297	B	(4)	(0.29	3.31)	4½-4½	(59)
3808.134	B	300	(0.29	3.53)	4½-5½	
4123.872	A	150	(0.85	3.85)	6½-6½	$b^4H^\circ-z^4H$
4083.233	A	200	(0.70	3.72)	5½-5½	(60)
3912.424	B	300	(0.29	3.45)	4½-4½	
4077.470	B	75	(0.29	3.32)	4½-3½	
3919.813	A	100	(0.70	3.85)	5½-6½	
3836.112	A	(15)	(0.23	3.45)	3½-4½	
3931.369	B	100	(0.29	3.43)	4½-3½	$b^4H^\circ-y^4H$
3854.322	B	100	(0.23	3.43)	3½-3½	(61)
3854.187	B	100	(0.23	3.43)	3½-2½	$b^4H^\circ-112$ (62)
3694.911	A	60	(0.29	3.63)	4½-5½	$b^4H^\circ-y^2H$ (63)
4407.278	A	(40)	(0.70	3.50)	5½-4½	$b^4H^\circ-x^2H$ † (64)
3908.408	A	125	(0.85	4.01)	6½-5½	$b^4H^\circ-y^4G$ (65)
3646.965	C	200	(0.29	3.68)	4½-3½	$b^4H^\circ-131$ † (66)
3501.453	B	60	(0.23	3.76)	3½-2½	$b^4H^\circ-141$ (67)
3279.842	B	125	(0.29	4.06)	4½-3½	$b^4H^\circ-171$ † (68)
3164.154	A	200	(0.29	4.19)	4½-3½	$b^4H^\circ-186$ † (69)
3146.407	B	200	(0.29	4.22)	4½-3½	$b^4H^\circ-188$ † (70)
3622.145	A	100	(0.85	4.26)	6½-6½	$b^4H^\circ-y^2I$ (71)
2990.873	A	80	(0.29	4.42)	4½-4½	$b^4H^\circ-209$ (72)
3272.253	A	250	(0.70	4.47)	5½-4½	$b^4H^\circ-213$ (73)
3169.183	C	150	(0.70	4.59)	5½-4½	$b^4H^\circ-221$ (74)
3218.944	C	200	(0.85	4.69)	6½-5½	$b^4H^\circ-229$ (75)
3201.714	C	300	(0.85	4.71)	6½-5½	$b^4H^\circ-232$ (76)
4117.288	A	(20)	(0.74	3.73)	3½-4½	$a^4D^\circ-z^4F$
4253.356	A	50	(0.46	3.36)	1½-2½	(77)
4246.711	A	(30)	(0.46	3.17)	1½-1½	
3914.949	A	(18)	(0.46	3.61)	1½-2½	$a^4D^\circ-126$ (78)
4193.094	C	50	(0.74	3.68)	3½-3½	$a^4D^\circ-132$ (79)
3234.274	C	300	(0.26	4.08)	½-1½	$a^4D^\circ-173$ (80)
3933.731	C	(60)	(0.70	3.84)	4½-5½	$a^4F^\circ-z^4G$
4046.341	B	100	(0.55	3.60)	3½-4½	(81)
4071.814	C	150	(0.33	3.36)	2½-3½	
4391.661	A	250	(0.32	3.13)	1½-2½	
4255.784	A	60	(0.70	3.60)	4½-4½	
4398.787	A	(20)	(0.55	3.36)	3½-3½	
4399.203	A	60	(0.33	3.13)	2½-2½	
4068.836	A	75	(0.70	3.73)	4½-4½	$a^4F^\circ-z^4F$ †
4330.445	A	30	(0.32	3.17)	1½-1½	(82)
4337.777	A	125	(0.33	3.17)	2½-1½	
3876.974	A	(15)	(0.55	3.73)	3½-4½	
4054.991	A	50	(0.32	3.36)	1½-2½	
4119.877	A	(20)	(0.33	3.32)	2½-3½	$a^4F^\circ-z^4H$ † (83)
3967.048	A	100	(0.33	3.44)	2½-1½	$a^4F^\circ-z^2D$
3960.914	A	125	(0.32	3.44)	1½-1½	(84)
4193.874	A	(35)	(0.55	3.49)	3½-3½	$a^4F^\circ-116$ (85)
4187.323	A	(35)	(0.55	3.50)	3½-4½	$a^4F^\circ-x^2H$ (86)
3882.446	A	75	(0.32	3.50)	1½- ½	$a^4F^\circ-z^4D$ (87)
3631.194	B	125	(0.33	3.72)	2½-3½	$a^4F^\circ-y^4G$ (88)
4338.255	A	50	(0.70	3.55)	4½-3½	$a^4F^\circ-123$
4119.015	A	(25)	(0.55	3.55)	3½-3½	(89)
3722.759	A	(12)	(0.32	3.64)	1½-1½	$a^4F^\circ-139$ (90)
4098.981	A	(15)	(0.70	3.71)	4½-3½	$a^4F^\circ-136$ †
2904.340	B	(5)	(0.55	3.71)	3½-3½	(91)
3760.694	A	(8)	(0.55	3.83)	3½-2½	$a^4F^\circ-148$
3519.077	A	(25)	(0.33	3.83)	2½-2½	(92)
3276.251	A	(18)	(0.33	4.09)	2½-2½	$a^4F^\circ-175$ (93)
3436.304	A	(15)	(0.55	4.14)	3½-2½	$a^4F^\circ-180$ †
3229.363	A	(35)	(0.32	4.14)	1½-2½	(94)
•3227.114§	A	300	(0.32	4.14)	1½-1½	$a^4F^\circ-181$ (95)
3405.977	C	100	(0.55	4.17)	3½-4½	$a^4F^\circ-184$ (96)
3189.638	A	(30)	(0.33	4.19)	2½-3½	$a^4F^\circ-186$ (97)
3379.172	C	100	(0.55	4.30)	3½-4½	$a^4F^\circ-187$ (98)
3366.554	B	150	(0.55	4.32)	3½-3½	$a^4F^\circ-188$
3171.615	B	200	(0.33	4.22)	2½-3½	(99)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
3417.450	A	125	(0.70	4.31)	4½-4½	a^4F^o-199 (100)
3236.735	A	150	(0.55	4.36)	3½-3½	a^4F^o-205 (101)
3317.797	A	30	(0.70	4.42)	4½-4½	a^4F^o-209 (102)
3304.836	A	60	(0.70	4.44)	4½-3½	a^4F^o-210
3177.137	A	(20)	(0.55	4.44)	3½-3½	(103)
3274.864	C	150	(0.70	4.47)	4½-4½	a^4F^o-213 (104)
3082.304	A	(20)	(0.55	4.55)	3½-3½	a^4F^o-217 (105)
3199.279	A	(25)	(0.70	4.56)	4½-4½	a^4F^o-218 (106)
3017.195	A	80	(0.70	4.79)	4½-3½	a^4F^o-237 (107)
4031.339	B	150	(0.32	3.38)	4½-5½	a^2G^o-z^4I
4539.755	B	200	(0.33	3.04)	3½-4½	(108)
4527.348	A	200	(0.32	3.04)	4½-4½	
3760.404	B	(2)	(0.32	3.60)	4½-4½	a^2G^o-z^4G†
4072.917	A	(20)	(0.33	3.36)	3½-3½	(109)
3613.701	A	150	(0.32	3.73)	4½-4½	a^2G^o-z^4F (110)
4278.866	A	(20)	(0.32	3.20)	4½-3½	a^2G^o-z^2G
4289.938	A	300	(0.33	3.20)	3½-3½	(111)
3837.210	B	(3)	(0.32	3.53)	4½-5½	a^2G^o-z^2H
4131.099	B	100	(0.33	3.31)	3½-4½	(112)
4120.829	A	150	(0.32	3.31)	4½-4½	
3628.247	A	(10)	(0.32	3.72)	4½-5½	a^2G^o-z^4H†
*3952.573	B	125	(0.33	3.45)	3½-4½	(113)
3943.141	B	(5)	(0.32	3.45)	4½-4½	
3508.470	B	(4)	(0.32	3.84)	4½-4½	a^2G^o-y^4G
3632.106	A	(10)	(0.33	3.72)	3½-3½	(114)
3838.542	A	150	(0.33	3.54)	3½-3½	
3823.903	A	50	(0.32	3.55)	4½-4½	a^2G^o-122
3832.745	B	(4)	(0.33	3.55)	3½-4½	(115)
3598.196	B	50	(0.33	3.76)	3½-2½	a^2G^o-141 (116)
3554.993	A	150	(0.32	3.79)	4½-4½	a^2G^o-y^2G (117)
3539.086	A	300	(0.32	3.81)	4½-3½	a^2G^o-145† (118)
3234.165	B	300	(0.33	4.14)	3½-2½	a^2G^o-180 (119)
3145.283	A	150	(0.33	4.25)	3½-2½	a^2G^o-193 (120)
3056.775	B	200	(0.33	4.36)	3½-3½	a^2G^o-205† (121)
3008.789	A	125	(0.32	4.42)	4½-4½	a^2G^o-209 (122)
4196.335	B	75	(0.42	3.36)	2½-3½	a^2F^o-z^4G†
4257.121	A	(20)	(0.46	3.36)	3½-3½	(123)
*4544.961	B	(5)	(0.42	3.13)	2½-2½	
3766.514	B	(4n)	(0.46	3.73)	3½-4½	a^2F^o-z^4F
4185.334	B	(5)	(0.42	3.36)	2½-2½	(124)
4479.432	A	30	(0.42	3.17)	2½-1½	
4320.723	A	60	(0.46	3.31)	3½-4½	a^2F^o-z^2H (125)
4125.776	B	(2)	(0.46	3.45)	3½-4½	a^2F^o-z^4H
4309.739	A	50	(0.46	3.32)	3½-3½	(126)
3857.240	B	(4)	(0.42	3.61)	2½-2½	a^2F^o-126
3908.543	B	100	(0.46	3.61)	3½-2½	(127)
3755.425	A	75	(0.42	3.70)	2½-1½	a^2F^o-134 (128)
3792.326	A	50	(0.46	3.71)	3½-3½	a^2F^o-136† (129)
3246.674	A	60	(0.42	4.22)	2½-3½	a^2F^o-188 (130)
3546.190	A	150	(1.31	4.79)	2½-2½	a^4P^o-238
3423.853	A	(20)	(1.19	4.79)	1½-2½	(131)
3476.842	A	150	(1.31	4.86)	2½-3½	a^4P^o-244 (132)
3909.313	A	(35)	(0.44	3.60)	4½-4½	b^2G^o-z^4G
4310.699	A	(30)	(0.49	3.36)	3½-3½	(133)
3971.684	A	100	(0.49	3.60)	3½-4½	
3992.386	A	125	(0.44	3.53)	4½-5½	b^2G^o-z^2H
4375.918	A	60	(0.49	3.31)	3½-4½	(134)
4300.331	A	60	(0.44	3.31)	4½-4½	
4289.454	A	(25)	(0.44	3.32)	4½-3½	b^2G^o-z^4H
4176.080	A	(12)	(0.49	3.45)	3½-4½	(135)
4364.658	A	125	(0.49	3.32)	3½-3½	
3799.038	A	(4)	(0.44	3.69)	4½-4½	b^2G^o-y^4H†
4128.067	B	(4)	(0.44	3.43)	4½-3½	(136)
4197.668	B	(4)	(0.49	3.43)	3½-3½	
4113.726	A	(30)	(0.49	3.49)	3½-3½	b^2G^o-116 (137)
3112.202	C	(15)	(0.44	4.41)	4½-5½	b^2G^o-x^2H
4107.426	B	200	(0.49	3.50)	3½-4½	(138)
4040.762	A	300	(0.44	3.50)	4½-4½	
4106.881	B	(5d)	(0.49	3.50)	3½-2½	b^2G^o-118 (139)
4042.584	A	200	(0.49	3.55)	3½-4½	b^2G^o-132 (140)
3953.660	A	(12)	(0.49	3.61)	3½-2½	b^2G^o-126 (141)
3782.524	B	75	(0.49	3.76)	3½-2½	b^2G^o-141 (142)
3687.802	A	30	(0.44	3.79)	4½-4½	b^2G^o-y^2G (143)
3423.708	C	300	(0.44	4.05)	4½-5½	b^2G^o-z^2I (144)
3390.515	A	(20)	(0.44	4.08)	4½-3½	b^2G^o-174 (145)
3271.151	A	(18)	(0.44	4.22)	4½-3½	b^2G^o-188
3314.721	A	100	(0.49	4.22)	3½-3½	(146)
3295.289	A	80	(0.49	4.24)	3½-2½	b^2G^o-192 (147)
3285.224	A	125	(0.49	4.25)	3½-2½	b^2G^o-193 (148)
3231.236	A	200	(0.49	4.31)	3½-2½	b^2G^o-200 (149)
3127.530	A	80	(0.44	4.39)	4½-3½	b^2G^o-207† (150)
3103.377	A	125	(0.44	4.42)	4½-4½	b^2G^o-209 (151)
3110.278	A	100	(0.49	4.46)	3½-2½	b^2G^o-212 (152)
4678.94	P		(1.20	3.84)	4½-5½	b^4F^o-z^4G
4696.12	P		(0.97	3.60)	3½-4½	(153)
4508.083	A	(8)	(0.62	3.36)	2½-3½	
4725.090	C	20	(0.52	3.13)	1½-2½	
4495.389	A	(4)	(0.62	3.36)	2½-2½	b^4F^o-z^4F
4654.286	A	30	(0.52	3.17)	1½-1½	(154)
4380.060	A	(30)	(0.62	3.44)	2½-1½	b^4F^o-z^2D (155)
4104.996	C	50	(0.62	3.63)	2½-3½	b^4F^o-127 (156)
4361.661	A	(18)	(0.53	3.36)	3½-3½	c^2G^o-z^4G†
4739.49	B	25	(0.53	3.13)	3½-2½	(157)
4014.899	A	125	(0.53	3.60)	3½-4½	
3857.032	B	(5)	(0.72	3.92)	4½-5½	c^2G^o-y^4H†
*4149.936	B	50	(0.73	3.69)	4½-4½	(158)
4245.976	B	(6)	(0.53	3.43)	3½-3½	
3343.861	C	200	(0.72	4.41)	4½-5½	c^2G^o-x^2H†
4153.67	P		(0.53	3.50)	3½-4½	(159)
3748.056	C	150	(0.72	4.01)	4½-5½	c^2G^o-y^4G
3958.266	B	(6)	(0.72	3.84)	4½-4½	(160)
4106.134	A	(30)	(0.72	3.72)	4½-3½	
4093.955	A	30	(0.53	3.54)	3½-2½	
4169.773	A	(12)	(0.72	3.68)	4½-3½	c^2G^o-131 (161)
4123.230	B	(5)	(0.72	3.71)	4½-3½	c^2G^o-136
3875.036	B	(6d)	(0.53	3.71)	3½-3½	(162)
4017.596	A	(10s)	(0.72	3.79)	4½-4½	c^2G^o-y^2G
3781.620	A	150	(0.53	3.79)	3½-4½	(163)
3357.215	A	125	(0.53	4.20)	3½-4½	c^2G^o-187 (164)
3344.761	A	300	(0.53	4.22)	3½-3½	c^2G^o-188† (165)
3300.152	C	60	(0.72	4.46)	4½-3½	c^2G^o-211 (166)
3186.126	C	125	(0.72	4.59)	4½-4½	c^2G^o-231 (167)
2976.905	A	100	(0.53	4.67)	3½-3½	c^2G^o-238 (168)
4190.636	C	(30)	(0.89	3.84)	5½-5½	a^4G^o-z^4G†
4437.613	B	(4)	(0.82	3.60)	4½-4½	(169)
4313.036	A	(15)	(0.67	3.60)	3½-4½	
4373.401	A	(35)	(0.53	3.36)	2½-3½	
4234.737	A	(12)	(0.82	3.73)	4½-4½	a^4G^o-z^4F† (170)
4443.743	A	(18)	(0.67	3.45)	3½-4½	a^4G^o-z^4H†
4427.917	B	(6)	(0.53	3.32)	2½-3½	(171)
3801.529	C	500	(0.89	4.14)	5½-6½	a^4G^o-y^4H
3983.901	B	60	(0.82	3.93)	4½-5½	(172)
4085.232	B	100	(0.67	3.69)	3½-4½	
4256.156	B	(5)	(0.53	3.43)	2½-3½	
4296.069	B	(6)	(0.82	3.69)	4½-4½	
4169.878	B	30	(0.53	3.49)	2½-3½	a^4G^o-116† (173)
4090.947	A	(6)	(0.82	3.84)	4½-4½	a^4G^o-y^4G (174)
3978.650	C	125	(0.53	3.64)	2½-1½	a^4G^o-139 (175)
4259.748	A	(15)	(0.89	3.79)	5½-4½	a^4G^o-y^2G
*3956.901	B	(4)	(0.67	3.79)	3½-4½	(176)
*3953.573	B	125	(0.82	3.94)	4½-4½	a^4G^o-159 (177)
3607.625	A	200	(0.67	4.09)	3½-2½	a^4G^o-175
*3468.113§	A	6	(0.53	4.09)	2½-2½	(178)
3609.687	C	250	(0.89	4.31)	5½-4½	a^4G^o-199 (179)
3051.975	C	60*	(0.53	4.58)	2½-1½	a^4G^o-220 (180)
3037.731	C	80	(0.53	4.60)	2½-1½	a^4G^o-222 (181)
3252.483	C	30	(0.89	4.69)	5½-5½	a^4G^o-229 (182)
2995.644	A	80	(0.67	4.79)	3½-3½	a^4G^o-237 (183)
3051.924	C	60*	(0.82	4.86)	4½-3½	a^4G^o-244 (184)
3063.010	C	400	(0.89	4.93)	5½-4½	a^4G^o-248 (185)
4203.944	A	150	(0.56	3.49)	3½-3½	b^4G^o-116 (186)
3488.553	A	75	(0.87	4.41)	4½-5½	b^4G^o-x^2H† (187)
4003.771	C	100	(0.93	4.01)	5½-5½	b^4G^o-y^4G
4135.443	A	(20)	(0.56	3.54)	2½-2½	(188)
3896.804	A	100	(0.56	3.72)	2½-3½	
*4149.936	B	60	(0.71	3.68)	3½-3½	b^4G^o-132 (189)
3924.644	B	60	(0.56	3.70)	2½-1½	b^4G^o-134 (190)
3923.109	C	125	(0.56	3.70)	2½-2½	b^4G^o-135 (191)
3912.191	B	(5)	(0.56	3.71)	2½-3½	b^4G^o-136 (192)
4001.049	B	(4)	(0.71	3.79)	3½-4½	b^4G^o-y^2G (193)
3980.895	B	100	(0.71	3.81)	3½-3½	b^4G^o-145 (194)
3921.731	B	100	(0.71	3.85)	3½-3½	b^4G^o-153 (195)
3442.380	A	75	(0.56	4.14)	2½-2½	b^4G^o-180 (196)
3439.831	C	60	(0.56	4.14)	2½-1½	b^4G^o-181 (197)
3341.868	A	100	(0.56	4.25)	2½-2½	b^4G^o-193 (198)
*3286.029§	A	(18)	(0.56	4.31)	2½-2½	b^4G^o-200† (199)
3349.967	A	(30)	(0.71	4.39)	3½-3½	b^4G^o-207 (200)
3055.243	C	150	(0.56	4.60)	2½-1½	b^4G^o-232 (201)
3956.284	C	150	(0.61	3.73)	5½-6½	a^2H^o-z^4I
4373.818	A	50	(0.56	3.38)	4½-5½	(202)
4449.336	A	200	(0.61	3.38)	5½-5½	
4214.041	B	50	(0.61	3.53)	5½-5½	a^2H^o-z^2H
4479.359	A	50	(0.56	3.31)	4½-4½	(203)
4146.234	A	75	(0.56	3.53)	4½-5½	
3809.324	A	(25)	(0.61	3.85)	5½-6½	a^2H^o-z^4H†
4270.189	A	60	(0.56	3.45)	4½-4½	(204)
3938.086	B	(7)	(0.56	3.69)	4½-4½	a^2H^o-y^4H†
4292.767	B	(4)	(0.56	3.43)	4½-3½	(205)
4075.853	B	125	(0.61	3.63)	5½-5½	a^2H^o-y^2H
4275.561	C	(25)	(0.56	3.44)	4½-4½	(206)
4012.389	B	300	(0.56	3.63)	4½-5½	
4198.431	B	(4)	(0.56	3.50)	4½-4½	a^2H^o-x^2H (207)
3830.871	B	(5)	(0.61	3.84)	5½-4½	a^2H^o-y^4G
3765.044	A	(12)	(0.56	3.84)	4½-4½	(208)
*4197.998§	B	(5)	(0.61	3.55)	5½-4½	a^2H^o-122
4130.706	A	100	(0.56	3.55)	4½-4½	(209)
3895.114	B	125	(0.61	3.77)	5½-4½	a^2H^o-142 (210)
3521.880	C	200	(0.61	4.11)	5½-4½	a^2H^o-177 (211)
3373.739	B	125	(0.56	4.23)	4½-3½	a^2H^o-188 (213)
3377.127	C	300	(0.61	4.26)	5½-6½	a^2H^o-y^2I (213)
3243.370	A	200	(0.56	4.36)	4½-3½	a^2H^o-205 (214)
3231.171	A	250	(0.56	4.39)	4½-3½	a^2H^o-207 (215)
3183.523	A	250	(0.56	4.44)	4½-3½	a^2H^o-210 (216)
3194.825	C	200	(0.61	4.47)	5½-4½	a^2H^o-213
3155.704	A	(20)	(0.56	4.47)	4½-4½	(217)
4037.665	A	(25)	(0.73	3.79)	3½-4½	b^2F^o-y^2G (218)
3599.974	A	(10)	(0.58	4.01)	2½-1½	b^2F^o-167 (219)
4352.733	B	75	(0.60	3.43)	1½-2½	a^2D^o-112 (220)
4007.589	A	(15)	(0.60	3.68)	1½-1½	a^2D^o-130 (221)
3817.455	A	(25)	(0.60	3.83)	1½- ½	a^2D^o-147 (222)
3699.920	B	50	(0.63	3.97)	2½-2½	a^2D^o-161 (223)
4326.826	A	(15)	(0.73	3.58)	1½-1½	a^2P^o-134 (224)
4280.141	A	(15)	(0.73	3.61)	1½-2½	a^2P^o-126 (225)
3992.913	A	(15)	(0.73	3.82)	1½-1½	a^2P^o-146 (226)
4368.234	A	(8)	(0.90	3.73)	6½-6½	a^2I^o-z^4I
4139.176	A	(5)	(0.74	3.73)	5½-6½	(227)
*5347.806§	A	(8)	(0.74	3.04)	5½-4½	
4684.605	A	30	(0.90	3.53)	6½-5½	a^2I^o-z^2H
4789.68	P		(0.74	3.31)	5½-4½	(228)
4551.397	A	(20)	(0.74	3.45)	5½-4½	a^2I^o-z^4H (229)
3517.380	C	300	(0.90	4.41)	6½-5½	a^2I^o-x^2H
4469.850	C	(4)	(0.74	3.50)	5½-4½	(230)
3735.675	A	(40)	(0.74	4.05)	5½-5½	a^2I^o-z^2I (231)
3590.598	A	125	(0.74	4.17)	5½-4½	a^2I^o-184 (232)
3673.789	A	60	(0.90	4.26)	6½-6½	a^2I^o-y^2I (233)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
3943.888	B	100	(0.79	3.92)	4½-5½	d^2G^o-y^4H (234)
•3623.837	B	200	(0.79	4.19)	4½-3½	d^2G^o-186 (235)
3600.583	B	60	(0.79	4.22)	4½-3½	d^2G^o-188 (236)
3083.670	C	100	(0.79	4.79)	4½-3½	d^2G^o-237 (237)
4440.883	A	(20)	(0.80	3.58)	2½-1½	c^2F^o-124 (238)
4264.370	A	(10)	(0.90	3.79)	3½-4½	c^2F^o-y^2G (239)
3989.444	B	30	(0.90	3.99)	3½-3½	c^2F^o-164 (240)
3741.727	A	(10)	(0.90	4.19)	3½-3½	c^2F^o-186 (241)
3716.930	A	(10)	(0.90	4.22)	3½-3½	c^2F^o-188 (242)
3559.328	A	(6)	(0.90	4.36)	3½-3½	c^2F^o-205 (243)
3373.455	C	100	(0.90	4.55)	3½-3½	c^2F^o-217 (244)
4360.16	A	(25)	(0.81	3.64)	1½-1½	b^2D^o-129 (245)
4159.033	B	50	(1.02	3.99)	2½-3½	b^2D^o-164 (246)
3296.883	A	40	(0.81	4.55)	1½-2½	b^2D^o-216 (247)
•3918.276	C	200	(0.89	4.04)	2½-2½	c^4F^o-169 (248)
3433.091	A	50	(1.27	4.86)	3½-3½	c^4F^o-244 (249)
4713.996	A	30	(1.10	3.72)	5½-5½	b^2H^o-z^4H (250)
4345.963	A	(6)	(1.10	3.94)	5½-4½	b^2H^o-159 (251)
4042.135	C	(8)	(1.10	4.16)	5½-6½	b^2H^o-z^2I
3984.675	A	100	(0.95	4.05)	4½-5½	(252)
3907.289	A	125	(1.10	4.26)	5½-6½	b^2H^o-y^2I (253)
4263.427	A	(40)	(1.04	3.93)	3½-2½	b^4D^o-158 (254)
3946.681	A	(20)	(0.97	4.09)	1½-2½	b^4D^o-175 (255)
4015.877	A	(20)	(1.04	4.11)	3½-4½	b^4D^o-177 (256)
3679.424	A	50	(1.01	4.36)	2½-3½	b^4D^o-205 (257)
3260.975	C	60	(1.01	4.79)	2½-2½	b^4D^o-238 (258)
4394.779	A	(30)	(1.25	4.06)	2½-3½	e^2F^o-171 (259)

Strongest Unclassified Lines of Ce II

6343.963	C	20	V
4971.475	C	20	V
4882.462	C	40	V
4757.842	C	15	V
4747.143	C	20	V
4737.282	C	60	V
4669.502	C	20	V
4444.704	C	75	V
4231.745	C	30	V
4111.394	C	60	V
4070.094	C	15	V
•3623.837	B	60	V

Ce III I P 19.5 Anal A List B Jan 1942

3055.585	A	600	(2.25	6.29)	4-5	fs^3F^o-fp^3G (1)
3031.559	A	500	(2.00	6.07)	3-4	
3443.609	A	150	(1.97	5.55)	2-3	
3228.564	A	400	(2.25	6.07)	4-4	
3470.894	A	300	(2.00	5.55)	3-3	
3353.262	A	150	(2.25	5.93)	4-4	fs^3F^o-fp^3F (2)
3143.956	A	200	(2.00	5.92)	3-3	
3427.332	A	125	(1.97	5.57)	2-2	
a3356.35	P	Cs+	(2.25	5.92)	4-3	
3454.368	A	150	(2.00	5.57)	3-2	
3141.247	A	250	(2.00	5.93)	3-4	
3121.548	A	400	(1.97	5.92)	2-3	
3459.374	A	200	(2.25	5.81)	4-3	fs^3F^o-fp^1F† (3)
3110.516	A	200	(2.25	6.21)	4-3	fs^3F^o-fp^3D† (4)
3106.974	A	200	(2.00	5.97)	3-2	
3057.575	A	100	(1.97	6.01)	2-1	
3085.089	A	200	(1.97	5.97)	2-2	
3022.736	A	200	(2.25	6.33)	4-4	fs^3F^o-fp^1G (5)
3504.596	A	100	(2.29	5.81)	3-3	fs^1F^o-fp^1F (6)
3147.05	A	300	(2.29	6.21)	3-3	fs^1F^o-fp^3D (7)
3057.214	A	200	(2.29	6.33)	3-4	fs^1F^o-fp^1G (8)
3056.556	A	125	(2.29	6.33)	3-2	fs^1F^o-fp^1D (9)

Pr I No analysis May 1942 (Temperature Class)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Pr II I P † Anal C List B Dec 1941						
4628.751	A	100	0.05	2.72	5-5	a^5I^o-2
4535.921	A	60	0.00	2.72	4-5	(1)
4517.595	A	40	0.05	2.79	5-5	a^5I^o-3†
•4429.238	A	60	0.00	2.79	4-5	(2)
4744.925	A	40	0.20	2.80	6-6	a^5I^o-4
4487.821	A	20	0.05	2.80	5-6	(3)
4100.746//	A	150	0.55	3.56	8-9	a^5I^o-z^5K
4143.136	A	150	0.37	3.35	7-8	(4)
4179.422	A	150	0.20	3.16	6-7	
4222.98	A	150	0.05	2.98	5-6	
4408.844	A	200	0.00	2.80	4-5	
4405.849	A	80	0.55	3.35	8-8	
•4429.238	A	100	0.37	3.16	7-7	
4449.867	A	150	0.20	2.98	6-6	
•4496.429	A	250	0.05	2.80	5-5	
4734.177	A	25	0.37	2.98	7-6	
4754.635	A	(15)	0.20	2.80	6-5	
4707.541	A	20	0.20	2.83	6-5	a^5I^o-5
4454.382	A	30	0.05	2.83	5-5	(5)
4368.327	A	150	0.00	2.83	4-5	
4651.517	A	75	0.20	2.86	6-6	a^5I^o-6 (6)
4297.764	A	80	0.00	2.87	4-5	a^5I^o-7 (7)
4206.739	A	100	0.55	3.48	8-8	a^5I^o-z^5I
4189.518	A	125	0.37	3.32	7-7	(8)
4164.192	A	100	0.20	3.17	6-6	
4118.481	A	200	0.05	3.05	5-5	
4225.327	A	150	0.00	2.92	4-4	
4458.336	A	25	0.55	3.32	8-7	
4412.155	A	20	0.37	3.17	7-6	
4333.913	A	100	0.20	3.05	6-5	
4305.763	A	100	0.05	2.92	5-4	
3966.573	A	80	0.37	3.48	7-8	
3965.263	A	150	0.20	3.32	6-7	
3964.825	A	250	0.05	3.17	5-6	
4044.818	A	60	0.00	3.05	4-5	
3953.516	A	125	0.55	3.67	8-8	a^5I^o-z^3K†
3997.054	A	40	0.37	3.46	7-7	(9)
4241.019	A	60	0.55	3.46	8-7	
4141.257	A	80	0.55	3.53	8-7	a^5I^o-z^3I
4578.139	A	25	0.37	3.07	7-6	(10)
3908.033	A	150	0.55	3.71	8-7	a^5I^o-z^5H
3918.856	A	150	0.37	3.52	7-6	(11)
3947.633	A	100	0.20	3.33	6-5	
3994.834	A	200	0.05	3.14	5-4	
3908.431	B	200	0.00	3.16	4-3	
3699.952	A	(12)	0.37	3.71	7-7	
3925.456	A	75	0.00	3.14	4-4	
4191.615	A	20	0.20	3.15	6-5	a^5I^o-16
3989.718	A	100	0.05	3.15	5-5	(12)
3920.524	A	15	0.00	3.15	4-5	
4421.231	A	40	0.37	3.16	7-6	a^5I^o-17
4173.273	A	50	0.20	3.16	6-6	(13)
3972.164	A	100	0.05	3.16	5-6	
4081.018	A	50	0.20	3.23	6-5	a^5I^o-19
3889.330	A	75	0.05	3.23	5-5	(14)
3823.571	A	(10)	0.00	3.23	4-5	
4272.271	A	80	0.37	3.26	7-6	a^5I^o-22
4039.357	A	30	0.20	3.26	6-6	(15)
4171.824	A	40	0.37	3.33	7-6	a^5I^o-z^3H
3949.438	A	125	0.20	3.33	6-6	(16)
3769.695	A	30	0.05	3.33	5-6	
3912.898	A	125	0.20	3.36	6-5	a^5I^o-26 (17)
3885.190	A	75	0.20	3.38	6-6	a^5I^o-27†
•3711.099	A	(25) 25	0.05	3.38	5-6	(18)
4282.440	A	60	0.55	3.43	8-8	a^5I^o-30
4033.857	A	75	0.37	3.43	7-8	(19)
4534.154	A	60	0.63	3.35	7-8	a^3I^o-z^5K
4510.160	A	100	0.42	3.16	6-7	(20)
4468.712	A	150	0.22	2.98	5-6	
4879.121	A	(30)	0.63	3.16	7-7	
4826.649	A	(40)	0.42	2.98	6-6	
5251.738	A	12	0.63	2.98	7-6	
4672.081	A	40	0.22	2.86	5-6	a^3I^o-6† (21)
4646.059	A	30	0.22	2.87	5-5	a^3I^o-7 (22)
4323.551	A	25	0.63	3.48	7-8	a^3I^o-z^5I
4261.796	A	15	0.42	3.32	6-7	(23)
4180.68	A	(8)	0.22	3.17	5-6	
4589.76	A	(5d)	0.63	3.32	7-7	
4492.427	A	15	0.42	3.17	6-6	
4351.849	A	50	0.22	3.05	5-5	
4561.461	A	(6)	0.22	2.92	5-4	
5292.10	A	60•	0.63	2.96	7-8	a^3I^o-10 (24)
4859.038	A	12	0.42	2.96	6-6	a^3I^o-11†
•4496.429	A	250	0.22	2.96	5-6	(25)
4056.543	A	80	0.63	3.67	7-8	a^3I^o-z^3K
4062.817	A	125	0.42	3.46	6-7	(26)
4413.765	A	50	0.22	3.01	5-6	
4359.795	A	30	0.63	3.46	7-7	
4762.727	A	20	0.42	3.01	6-6	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Pr II continued						
4254.420	A	20	0.63	3.53	7-7	a^3I^o-z^3I† (27)
4664.647	A	20	0.42	3.07	6-6	
3971.164	A	40	0.42	3.53	6-7	
4329.415	A	25	0.22	3.07	5-6	
4008.714	A	75	0.63	3.71	7-7	a^3I^o-z^5H† (28)
3982.063	A	150	0.42	3.52	6-6	
3962.445	A	40	0.22	3.33	5-5	
4395.788	A	30	0.42	3.23	6-5	a^3I^o-19 (29)
4096.822	A	25	0.22	3.23	5-5	
4347.490	A	30	0.42	3.26	6-6	a^3I^o-22† (30)
4054.845	A	80	0.22	3.26	5-6	
4338.694	A	25	0.42	3.26	6-7	a^3I^o-23† (31)
4302.100	A	(60)	0.42	3.29	6-5	a^3I^o-25 (32)
4015.389	A	40	0.22	3.29	5-5	
4568.545	A	(30)	0.63	3.33	7-6	a^3I^o-z^3H (33)
4243.528	A	20	0.42	3.33	6-6	
3964.261	A	40	0.22	3.33	5-6	
4403.605	A	25	0.63	3.43	7-8	a^3I^o-30 (34)
5110.768	A	60	1.14	3.56	10-9	a^5L^o-z^5K† (35)
5173.898	A	60	0.96	3.35	9-8	
5220.113	A	50	0.79	3.16	8-7	
5259.743	A	80	0.63	2.98	7-6	
5322.778	A	60	0.48	2.80	6-5	
4801.150	A	15	0.48	3.05	6-5	a^5L^o-z^5I† (36)
5034.415	A	20	1.11	3.56	9-9	a^5K^o-z^5K† (37)
5135.135	A	20	0.95	3.35	8-8	
5219.053	A	20	0.79	3.16	7-7	
5292.630	A	30	0.65	2.98	6-6	
5381.262	A	60	0.51	2.80	5-5	
5195.110	A	20	1.11	3.48	9-8	a^5K^o-z^5I (38)
5206.562	A	20	0.95	3.32	8-7	
5195.307	A	30	0.79	3.17	7-6	
5129.520	A	40	0.65	3.05	6-5	
5110.382	A	60	0.51	2.92	5-4	
6025.723	A	20	1.43	3.48	8-8	b^5I^o-z^5I† (39)
6305.262	A	4	1.36	3.32	7-7	
6244.344	A	5	1.19	3.17	6-6	
6161.194	A	50	1.05	3.05	5-5	
6165.945	A	60	0.92	2.92	4-4	

Strongest Unclassified Lines of Pr II

3880.466	B	100	V
3877.225	B	200	V
3865.458	B	100	V
3854.905	B	100	V
3852.805	B	150	V
3851.617	B	200	V
3850.825	B	150	V
3846.605	B	125	V
3830.719	B	125	V
3826.292	B	100	V
3818.281	B	125	V
3816.166	B	125	V
3800.303	B	200	V
3792.524	B	100	V
3772.854	B	100	V
3764.811	B	125	IV
3761.867	B	250	V
3739.193	B	100	IV
3687.039	B	125	IV
3668.830	B	150	IV

Nd I No analysis May 1942 (Temperature Class)

Nd II I P † Anal C List B Apr 1942

•4959.130§	A	60	0.06	2.55	4½-4½	a^6I-1°
4835.982	A	15	0.00	2.55	3½-4½	(1)
4920.692	A	60	0.06	2.57	4½-3½	a^6I-30830
4799.423	A	10	0.00	2.57	3½-3½	(2)
4859.030	A	100	0.32	2.86	6½-5½	a^6I-z^8H^o
4825.482	A	150	0.18	2.74	5½-4½	(3)
4811.343	A	100	0.06	2.63	4½-3½	
•4706.542§	A	100	0.00	2.62	3½-2½	
4609.148	A	(1)	0.18	2.86	5½-5½	
4612.473	A	4	0.06	2.74	4½-4½	
4414.432	A	8	0.06	2.86	4½-5½	
4505.75	A	(8)	0.00	2.74	3½-4½	
4680.734	A	30	0.06	2.70	4½-3½	a^6I-21871 (4)
4569.849	A	2	0.06	2.76	4½-3½	a^6I-3°
4465.075	A	10	0.00	2.76	3½-3½	(5)
4763.865	A	20	0.18	2.77	5½-4½	a^6I-4°
4556.136	A	12	0.06	2.77	4½-4½	(6)
4451.978	A	50	0.00	2.77	3½-4½	
4709.714	A	20	0.18	2.80	5½-5½	a^6I-5°†
4506.582	A	30	0.06	2.80	4½-5½	(7)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Nd II continued						
4411.052	A	150	0.18	2.98	5½-5½	a⁶I-z⁶I° †
4342.071	A	20	0.06	2.91	4½-4½	(8)
4375.039	A	30	0.00	2.82	3½-3½	
4232.378	A	150	0.06	2.98	4½-5½	
4247.367	A	200	0.00	2.91	3½-4½	
4412.265	A	20	0.06	2.86	4½-4½	a⁶I-23171
4314.511	A	50	0.00	2.86	3½-4½	(9)
4012.250	A	300	0.63	3.70	8½-9½	a⁶I-z⁶K°
4061.085	A	200	0.47	3.51	7½-8½	(10)
4109.455	A	200	0.32	3.32	6½-7½	
4156.083	A	250	0.18	3.15	5½-6½	
4177.321	A	200	0.06	3.02	4½-5½	
4303.573	A	400	0.00	2.87	3½-4½	
4284.518	A	100	0.63	3.51	8½-8½	
4335.766	A	150	0.47	3.32	7½-7½	
4358.169	A	200	0.32	3.15	6½-6½	
4351.295	A	40	0.18	3.02	5½-5½	
4400.828	A	100	0.06	2.87	4½-4½	
4368.632	A	60	0.06	2.89	4½-3½	a⁶I-6°
4272.789	A	30	0.00	2.89	3½-3½	(11)
4556.735	A	12	0.18	2.89	5½-4½	a⁶I-7°
4366.315	A	12	0.06	2.89	4½-4½	(12)
4270.565	A	25	0.00	2.89	3½-4½	
4465.601	A	10	0.18	2.95	5½-5½	a⁶I-8° †
4282.570	A	15	0.06	2.95	4½-5½	(13)
4246.879	A	(10)	0.06	2.97	4½-4½	a⁶I-9° †
4156.265	A	30	0.00	2.97	3½-4½	(14)
4374.923	A	20	0.18	3.00	5½-4½	a⁶I-10°
4199.099	A	10	0.06	3.00	4½-4½	(15)
4110.472	A	40	0.00	3.00	3½-4½	
4173.379	A	8	0.06	3.02	4½-3½	a⁶I-11°
4085.815	A	30	0.00	3.02	3½-3½	(16)
4277.279	A	6	0.18	3.07	5½-5½	a⁶I-12° †
4109.073	A	100	0.06	3.07	4½-5½	(17)
4457.179	A	(5)	0.32	3.09	6½-5½	a⁶I-25014
4080.227	A	50	0.06	3.09	4½-5½	(18)
3973.269	A	80	0.63	3.73	8½-8½	a⁶I-y⁶I°
3990.103	A	60	0.47	3.56	7½-7½	(19)
4020.872	A	60	0.32	3.39	6½-6½	
3951.154	A	150	0.18	3.31	5½-5½	
4018.826	A	30	0.06	3.13	4½-4½	
3991.743	A	80	0.00	3.09	3½-3½	
4205.595	A	40	0.63	3.56	8½-7½	
4227.719	A	30	0.47	3.39	7½-6½	
4133.361	A	50	0.32	3.31	6½-5½	
4179.585	A	30	0.18	3.13	5½-4½	
4075.272	A	50	0.06	3.09	4½-3½	
3780.391	A	20	0.47	3.73	7½-8½	
3805.359	A	100	0.32	3.56	6½-7½	
3848.233	A	50	0.18	3.39	5½-6½	
3807.227	A	(15)	0.06	3.31	4½-5½	
*3937.575§	A	5	0.00	3.13	3½-4½	
4234.196	A	6	0.18	3.10	5½-5½	a⁸I-13° †
4069.267	A	80	0.06	3.10	4½-5½	(20)
*3976.836§	A	60	0.00	3.10	3½-3½	a⁶I-25138 (31)
4961.396	A	10	0.63	3.12	8½-7½	a⁶I-25235
4413.784	A	(5)	0.32	3.12	6½-7½	(22)
4034.012	A	(4)	0.06	3.12	4½-3½	a⁶I-14°
3952.195	A	100	0.00	3.12	3½-3½	(23)
4391.110	A	10	0.32	3.13	6½-5½	a⁶I-15°
4186.033	A	8	0.18	3.13	5½-5½	(24)
4024.785	A	30	0.06	3.13	4½-5½	
4113.836	A	20	0.18	3.18	5½-4½	a⁶I-16°
3958.001	A	40	0.06	3.18	4½-4½	(25)
3863.409	A	60	0.00	3.19	3½-2½	a⁶I-y⁶H° (26)
3941.512	A	150	0.06	3.19	4½-4½	a⁶I-17° †
3863.327	A	20	0.00	3.19	3½-4½	(27)
3838.981	A	80	0.00	3.21	3½-2½	a⁶I-26041 (28)
3894.627	A	40	0.06	3.23	4½-5½	a⁶I-26182 (29)
4040.796	A	100	0.18	3.24	5½-6½	a⁶I-18° (30)
4038.124	A	20	0.18	3.24	5½-4½	a⁶I-19°
*3887.866§	A	30	0.06	3.24	4½-4½	(31)
3811.774	A	20	0.00	3.24	3½-4½	
4220.258	A	20	0.32	3.24	6½-5½	a⁶I-21°
4030.470	A	25	0.18	3.24	5½-5½	(32)
3880.779	A	40	0.06	3.24	4½-5½	
3826.416	A	60	0.06	3.29	4½-3½	a⁶I-20°
3752.679	A	30	0.00	3.29	3½-3½	(33)
4043.596	A	15	0.32	3.37	6½-6½	a⁶I-22°
3869.045	A	30	0.18	3.37	5½-6½	(34)
3851.748	A	60	0.18	3.39	5½-4½	a⁶I-23°
3714.808	A	20	0.06	3.39	4½-4½	(35)
4228.200	A	8	0.47	3.39	7½-7½	a⁶I-24° †
4031.330	A	80	0.32	3.39	6½-7½	(36)
3973.650	A	60	0.32	3.43	6½-6½	a⁶I-27744 (37)
3614.673	A	(8)	0.06	3.48	4½-4½	a⁶I-28170 (38)
4175.606	A	50	0.63	3.58	8½-8½	a⁶I-29027
3963.114	A	60	0.47	3.58	7½-8½	(39)
3328.270	A	80	0.00	3.71	3½-2½	a⁶I-30037 (40)
3339.063	A	60	0.06	3.76	4½-3½	a⁶I-30453
3282.777	A	8	0.00	3.76	3½-3½	(41)
3334.471	A	50	0.18	3.88	5½-4½	a⁶I-25°
*3231.349§	A	(8)	0.06	3.88	4½-4½	(42)
5255.510	A	50	0.20	2.55	4½-4½	a⁴I-1° (43)
5212.365	A	30	0.20	2.57	4½-3½	a⁴I-20830 (44)
5603.651	A	5	0.38	2.58	5½-5½	a⁴I-2°
*5191.448§	A	100	0.20	2.58	4½-5½	(45)
5361.174	A	3	0.56	2.86	6½-5½	a⁴I-z⁶H°
5228.427	A	6	0.38	2.74	5½-4½	(46)
5089.837	A	8	0.20	2.63	4½-3½	
*4867.839§	A	3	0.20	2.74	4½-4½ †	
4647.759	A	3	0.20	2.86	4½-5½	
4820.336	A	30	0.20	2.76	4½-3½	a⁴I-3° (47)
5092.797	A	30	0.38	2.80	5½-5½	a⁴I-5° † (48)
4446.387	A	200	0.20	2.98	4½-5½	a⁴I-z⁶I°
4567.606	A	12	0.20	2.91	4½-4½	(49)
4715.589	A	25	0.20	2.82	4½-3½	
4456.394	A	40	0.74	3.51	7½-8½	a⁴I-z⁶K° †
4462.985	A	250	0.56	3.32	6½-7½	(50)
4451.566	A	400	0.38	3.15	5½-6½	
4385.663	A	150	0.20	3.02	4½-5½	
4597.013	A	20	0.20	2.89	4½-3½	a⁴I-6° (51)
4914.385	A	15	0.38	2.89	5½-4½	a⁴I-7°
4594.447	A	6	0.20	2.89	4½-4½	(52)
4501.808	A	50	0.20	2.95	4½-5½	a⁴I-8° † (53)
4763.624	A	5	0.38	2.97	5½-4½	a⁴I-9°
4462.407	A	30	0.20	2.97	4½-4½	(54)
4703.576	A	15	0.38	3.00	5½-4½	a⁴I-10° (55)
4381.290	A	(10)	0.20	3.02	4½-3½	a⁴I-11° (56)
4120.654	A	6	0.74	3.73	7½-8½	a⁴I-y⁶I°
4106.582	A	8	0.56	3.56	6½-7½	(57)
4100.240	A	15	0.38	3.39	5½-6½	
3979.479	A	60	0.20	3.31	4½-5½	
4371.069	A	(10)	0.74	3.56	7½-7½	
4358.699	A	15	0.56	3.39	6½-6½	
4217.282	A	5	0.38	3.31	5½-5½	
4211.286	A	40	0.20	3.13	4½-4½	
4541.269	A	50	0.38	3.10	5½-5½	a⁴I-13°
4266.716	A	30	0.20	3.10	4½-5½	(58)
4256.239	A	8	0.20	3.10	4½-3½	a⁴I-25138 (59)
4797.157	A	20	0.56	3.13	6½-5½	a⁴I-15° † (60)
4144.553	A	20	0.20	3.18	4½-4½	a⁴I-16° (61)
4075.116	A	60	0.20	3.23	4½-5½	a⁴I-26182 † (62)
4307.778	A	15	0.38	3.24	5½-5½	a⁴I-21°
4059.961	A	50	0.20	3.24	4½-5½	(63)
4000.493	A	30	0.20	3.29	4½-3½	a⁴I-20° (64)
4123.881	A	40	0.38	3.37	5½-6½	a⁴I-22° (65)
4051.145	A	60	0.38	3.43	5½-6½	a⁴I-27744 † (66)
3982.355	A	20	0.38	3.48	5½-4½	a⁴I-28170
3769.644	A	40	0.20	3.48	4½-4½	(67)
4338.697	A	80	0.74	3.58	7½-8½	a⁴I-29027 (68)
3811.073	A	20	0.38	3.62	5½-4½	a⁴I-29398
3615.817	A	30	0.20	3.62	4½-4½	(69)
3470.866	A	20	0.20	3.76	4½-3½	a⁴I-30453 (70)
3522.044	A	25	0.38	3.88	5½-4½	a⁴I-25°
3354.621	A	10	0.20	3.88	4½-4½	(71)
6257.834	A	(25)	0.55	2.55	5½-4½	a⁶L-1° (72)
5548.474	A	8	0.55	2.77	5½-4½	a⁶L-4° (73)
5361.474	A	60	0.68	2.98	6½-5½	a⁶L-z⁶I°
5234.195	A	50	0.55	2.91	5½-4½	(74)
5130.596	A	40	1.30	3.70	10½-9½	a⁶L-z⁶K° †
5193.621	A	80	1.13	3.51	9½-8½	(75)
5249.585	A	100	0.97	3.32	8½-7½	
5293.168	A	100	0.82	3.15	7½-6½	
5273.431	A	50	0.68	3.02	6½-5½	
5319.818	A	125	0.55	2.87	5½-4½	
5442.274	A	40	0.68	2.95	6½-5½	a⁶L-8° (76)
5165.140	A	10	0.68	3.07	6½-5½	a⁶L-12° (77)
5934.747	A	(10)	0.74	2.82	4½-3½	a⁶K-z⁶I°
5811.572	A	12	0.86	2.98	5½-5½	(78)
5702.244	A	20	0.74	2.91	4½-4½	
5371.935	A	20	1.41	3.70	9½-9½	a⁶K-z⁶K° †
5485.699	A	80	1.26	3.51	8½-8½	(79)
5594.425	A	150	1.12	3.32	7½-7½	
5688.525	A	150	0.98	3.15	6½-6½	
5708.280	A	40	0.86	3.02	5½-5½	a⁶K-z⁶K° †
5804.020	A	60	0.74	2.87	4½-4½	cont
5421.559	A	20	0.74	3.02	4½-5½ †	
5302.279	A	6	1.41	3.73	9½-8½	a⁶K-y⁶I° †
*5356.976§	A	15	1.26	3.56	8½-7½	(80)
5431.526	A	40	1.12	3.39	7½-6½	
5311.461	A	12	0.98	3.31	6½-5½	
5416..31	A	15	0.86	3.13	5½-4½	
5250.816	A	8	0.74	3.09	4½-3½	
5276.879	A	8	0.86	3.19	5½-4½	a⁶K-17° (81)
5474.734	A	10	0.98	3.24	6½-6½	a⁶K-18° (82)
5455.815	A	20	0.98	3.24	6½-5½	a⁶K-21° (83)
5668.868	A	15	1.41	3.58	9½-8½	a⁶K-29027 † (84)
*6385.196§	A	150	1.16	3.09	5½-5½ †	b⁶I-25014 (85)
*5620.62 §	P	500	1.54	3.73	8½-8½	b⁶I-y⁶I° †
5718.120	A	12	1.40	3.56	7½-7½	(86)
5842.391	A	8	1.28	3.39	6½-6½	
5740.862	A	15	1.16	3.31	5½-5½	
5891.528	A	15	1.04	3.13	4½-4½	
5706.206	A	15	0.93	3.09	3½-3½	
5614.303	A	(10)	1.04	3.24	4½-4½	b⁶I-19° (87)

Strongest Unclassified Lines of Nd II

5451.115	B	100	IV
4632.276	B	20	III
4542.603	B	60	IV
4282.443	B	50	IV
*4135.325	B	50	IV
4031.807	B	100	IV
4023.003	B	80	IV
4012.704	B	50	III
4007.435	B	50	IV
4004.010	B	60	III
3994.684	B	80	III
3953.525	B	60	IV
3934.823	B	50	IV
3930.965	B	100	III
3911.169	B	60	IV
3905.886	B	100	III
3901.850	B	50	IV
3900.226	B	60	III
3890.940	B	60	III
3890.580	B	50	IV
3889.929	B	50	IV
3878.582	C	50	IV
3848.524	B	80	IV
3836.541	B	60	IV
3814.735	B	60	III
3808.772	B	30	III
3803.474	B	40	III
3784.250	B	80	III
3763.475	B	60	III
3758.944	B	40	III
3741.427	B	50	III
3728.130	B	50	III
3723.506	B	50	III
3685.804	C	60	IV
3673.542	C	50	V
3672.363	C	50	V
3665.180	B	50	IV
3609.788	B	40	III
3592.595	B	60	IV
3587.504	B	50	IV
3543.352	B	50	IV
3393.641	B	60	IV
3364.950	B	50	IV
3300.148	B	70	IV
3285.093	B	50	IV
3275.318	B	60	IV
3134.897	B	50	V
3133.603	B	100	V
3116.141	B	60	V
3115.172	B	100	V
3098.476	B	50	V
3092.915	B	60	V
3075.380	B	50d	V
3014.165	B	60	V
3007.975	B	50	V

Sm I I P 5.6† Anal C List D Apr 1942

6671.51	A	800	0.50	2.35	6-7	a⁷F-z⁹G° †
6588.91	A	500	0.39	2.26	5-6	(1)
5659.86	B	400	0.10	2.28	2-1	a⁷F-38°
*5516.09	B	500d	(0.04 0.28	2.27 2.52	1-2 4-	(2) 37° 59°)
4841.701	B	400	0.50	3.05	6-5	102°
3925.216	B	400	0.10	3.24	2-1	118°
*3756.411§	B	600	0.10	3.39	2-3	137°
4296.743//	B	300	0.50	3.37	6-7	a⁷F-z⁷G° † (3)

Sm II I P 11.4 Anal B List C Mar 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4704.397	A	500	0.00	2.62	1- 1	a8F-1°
4648.160	A	100	0.00	2.66	1-1	(1) 2°
4606.514	A	100	0.00	2.68	1-1	5°
4092.266	A	400	0.00	3.02	1-1	33°
3970.528	A	200	0.00	3.11	1-1	35°
3941.874	A	300	0.00	3.13	1-1	37°
3745.605	A	200d	0.00	3.29	1- 1	a8F-z8G°
•3693.989§	A	1200	0.00	3.34	1-1	(2) z8G°
3304.523	A	200	0.00	3.73	1- 1	124°
3250.372	A	200d	0.00	3.80	1-1	129°
3207.185	A	400	0.00	3.85	1-1	134°
4777.846	A	200	0.04	2.62	1- 1	a8F-1°
4719.838	A	200	0.04	2.66	1-1	(3) 2°
4687.183	A	400	0.04	2.67	1- 1	4°
4676.911	A	500	0.04	2.68	1-1	5°
4523.037	A	150	0.04	2.77	1-2	9°
4229.704	A	300	0.04	2.96	1-1	a8F-18°
4183.764	A	150	0.04	2.99	1- 1	(4) 20°
4042.723	A	200	0.04	3.09	1-1	33°
4023.231	A	300	0.04	3.11	1-2	34°
3993.308	A	200	0.04	3.13	1-1	37°
3896.977	A	600	0.04	3.21	1-2	a8F-47°
3792.025	A	150	0.04	3.29	1- 1	(5) z8G°
3787.203	A	100	0.04	3.30	1-1	61°
3739.197	A	200	0.04	3.34	1-1	z8G°
3724.902	A	200	0.04	3.35	1-2	72°
3708.410	A	200	0.04	3.37	1-2	76°
3661.365	A	1000	0.04	3.41	1-2	a8F-z8G°
3634.928	A	200	0.04	3.44	1-1	(6) 85°
3622.504	A	100	0.04	3.45	1-2	86°
3340.579	A	800	0.04	3.73	1- 1	124°
3254.377	A	500	0.04	3.83	1-2	133°
3241.161	A	500	0.04	3.85	1-1	134°
4791.584	A	200	0.10	2.68	2-1	a8F-5°
4745.680	A	500	0.10	2.70	2-1	(7) 6°
4669.396	A	500	0.10	2.75	2-2	8°
4458.517	A	400	0.10	2.87	2-3	14°
4345.858	A	150	0.10	2.94	2-3	17°
4323.284	A	200	0.10	2.96	2-1	a8F-18°
4237.663	A	200	0.10	3.02	2-1	(8) 23°
4210.352	A	150	0.10	3.03	2-2	24°
•4155.217	A	100	0.10	3.07	2-3	30°
4149.831	A	200	0.10	3.08	2-2	32°
4042.905	A	250	0.10	3.16	2-3	a8F-42°
3976.270	A	200	0.10	3.21	2-2	(9) 47°
3948.113	A	300	0.10	3.23	2-3	50°
3943.239	A	200	0.10	3.23	2-2	51°
3917.442	A	200	0.10	3.25	2-2	54°
3880.766	A	150	0.10	3.28	2-1	a8F-59°
3862.054	A	150	0.10	3.30	2-1	(10) 61°
3830.293	A	200	0.10	3.33	2-3	66°
3812.067	A	150	0.10	3.34	2-1	z8G°
3805.626	A	200	0.10	3.35	2-3	71°
3797.283	A	150	0.10	3.35	2-2	a8F-72°
3793.971	A	500	0.10	3.36	2-3	(11) 73°
3731.258	A	600	0.10	3.41	2-2	z8G°
3688.418	A	100	0.10	3.45	2-1	87°
3670.840	A	1000	0.10	3.47	2-3	z8G°
3627.971	A	100	0.10	3.51	2-2	a8F-95°
3623.316	A	200	0.10	3.51	2-2	(12) 96°
3621.229	A	600	0.10	3.51	2-3	97°
3584.259	A	100	0.10	3.55	2-3	102°
3511.227	A	150	0.10	3.62	2-	108°
3295.813	A	300	0.10	3.85	2-1	a8F-134°
3231.528	A	200	0.10	3.92	2-3	(13) 139°
3216.850	A	300	0.10	3.94	2-3	141°
•3187.216	A	300	0.10	3.98	2-3	144°
4815.808	A	400	0.18	2.75	3-2	a8F- 8°
4693.628	A	150	0.18	2.81	3-3	(14) 11°
4674.599	A	600	0.18	2.82	3-3	12°
4591.818	A	100	0.18	2.87	3-3	14°
4511.829	A	200	0.18	2.92	3-4	15°
4390.858	A	600	0.18	2.99	3-4	a8F-21°
4329.016	A	400	0.18	3.03	3-2	(15) 24°
4309.012	A	200	0.18	3.05	3-3	27°
4265.075	A	100d	0.18	3.08	3-2	32°
•4220.659	A	200	0.18	3.11	3-2	34°
•4178.019	A	100d	0.18	3.14	3-2	a8F-39°
4152.209	A	200	0.18	3.16	3-3	(16) 42°
4113.902	A	100	0.18	3.18	3-3	45°
4047.160	A	80	0.18	3.23	3-2	51°
4019.982	A	80	0.18	3.25	3-2	54°
3986.682	A	150	0.18	3.28	3-4	a8F-58°
3946.511	A	200	0.18	3.31	3-4	(17) 63°
3928.279	A	400	0.18	3.33	3-3	66°
3890.080	A	200	0.18	3.36	3-3	73°
3875.545	A	200	0.18	3.37	3-2	76°
3871.778	A	300	0.18	3.37	3-4	a8F-77°
3835.725	A	100d	0.18	3.40	3-	(18) 81°
3824.175	A	200	0.18	3.41	3-2	z8G°
•3760.694	A	500	0.18	3.47	3-3	z8G°
•3743.868	A	500	0.18	3.48	3-4	92°
3726.805	A	100	0.18	3.50	3-4	a8F-94°
3710.869	A	100	0.18	3.51	3-2	(19) 96°
3708.654	A	300	0.18	3.51	3-3	97°
3645.290	A	300	0.18	3.57	3-4	103°
3634.290	A	1500d?	0.18	3.58	3-4	z8G°

Sm II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3601.692	A	200	0.18	3.61	3-3	a8F-107°
3583.394	A	150	0.18	3.63	3-4	(20) 110°
3530.600	A	150	0.18	3.68	3-4	118°
3382.399	A	600	0.18	3.83	3-2	133°
3320.155	A	600d	0.18	3.90	3-2	136°
3312.415	A	400	0.18	3.91	3-2	a8F-137°
•3301.678	A	100	0.18	3.92	3-4	(21) 138°
3285.664	A	200	0.18	3.94	3-3	141°
3230.559	A	400	0.18	4.00	3-4	146°
3187.006	A	200	0.18	4.06	3-4	149°
3178.125	A	200	0.18	4.07	3-4	151°
4615.690	A	300	0.19	2.86	1-1	a6F-13°
4403.360	A	100	0.19	2.99	1- 1	(22) 20°
4225.328	A	400	0.19	3.11	1-1	35°
4041.675	A	200	0.19	3.24	1- 1	53°
3891.210	A	100	0.19	3.36	1- 1	74°
3799.542	A	300	0.19	3.44	1-1	85°
3241.586	A	100	0.19	3.99	1-2	145°
4938.100	A	100	0.25	2.75	1-2	a6F-8°
4577.690	A	250	0.25	2.94	1-2	(23) 17°
4552.659	A	150	0.25	2.96	1-1	18°
4499.475	A	125	0.25	2.99	1- 1	20°
4360.720	A	150	0.25	3.08	1-2	32°
4169.478	A	200	0.25	3.21	1-2	a6F-47°
4139.231	A	100	0.25	3.24	1-2	(24) 52°
4083.584	A	100	0.25	3.27	1-1	55°
•4064.576	A	300	0.25	3.28	1-1	59°
3966.045	A	150	0.25	3.36	1- 1	74°
3788.125	A	400	0.25	3.51	1-2	a6F-95°
3762.588	A	200	0.25	3.53	1-2	(25) 99°
3712.764	A	200	0.25	3.57	1-2	104°
3711.543	A	200	0.25	3.57	1-1	105°
3650.188	A	200	0.25	3.63	1-2	111°
3214.125	A	150	0.25	4.09	1-2	152°
4844.208	A	300	0.28	2.82	4-3	a8F-12°
4669.650	A	500	0.28	2.92	4-4	(26) 15°
4646.684	A	200	0.28	2.93	4-4	16°
4473.015	A	150	0.28	3.04	4-5	25°
4452.727	A	250	0.28	3.05	4-3	27°
4334.153	A	400	0.28	3.12	4-3	a8F-36°
4318.936	A	500	0.28	3.13	4-5	(27) 38°
4285.496	A	200	0.28	3.16	4-3	42°
4279.678	A	200	0.28	3.16	4-4	43°
4244.702	A	200	0.28	3.18	4-3	45°
4109.405	A	150	0.28	3.28	4-4	a8F-58°
4066.737	A	200	0.28	3.31	4-4	(28) 63°
3987.428	A	80	0.28	3.37	4-4	77°
3935.764	A	150	0.28	3.41	4-5	83°
3857.912	A	100	0.28	3.48	4-5	91°
3851.880	A	150	0.28	3.48	4-4	a8F-92°
3833.828	A	200	0.28	3.50	4-4	(29) 94°
3800.887	A	400	0.28	3.52	4-5	98°
3735.980	A	500	0.28	3.58	4-4	z8G°
3692.221	A	150	0.28	3.62	4-5	109°
•3667.932§	A	150d	0.28	3.64	4-5	a8F-112°
3627.014	A	400	0.28	3.68	4-5	(30) 117°
3609.491	A	1200	0.28	3.70	4-5	z8G°
•3384.658	A	300	0.28	3.92	4-3	139°
3368.568	A	200	0.28	3.94	4-3	141°
3336.124	A	200	0.28	3.98	4-3	a8F-144°
3310.661	A	500	0.28	4.00	4-4	(31) 146°
3187.787	A	200	0.28	4.15	4-5	155°
3169.875	A	250	0.28	4.17	4-5	157°
4952.371	A	150	0.33	2.82	2-3	a6F-12°
4566.206	A	200	0.33	3.03	2-2	(32) 24°
4543.948	A	250	0.33	3.05	2-3	27°
4420.526	A	200	0.33	3.12	2-3	36°
4292.182	A	150	0.33	3.21	2-2	47°
•4064.576	A	300	0.33	3.37	2-2	a6F-76°
4035.110	A	250	0.33	3.39	2-	(33) 79°
3976.430	A	200	0.33	3.44	2-1	85°
3947.838	A	100	0.33	3.46	2-1	88°
3881.383	A	100	0.33	3.51	2-3	97°
3847.511	A	150	0.33	3.54	2-3	a6F-100°
3838.941	A	200	0.33	3.55	2-2	(34) 102°
3764.370	A	300	0.33	3.61	2-3	107°
3755.276	A	200	0.33	3.62	2-	108°
•3743.868	A	500	0.33	3.63	2-2	111°
•3707.167§	A	100d	0.33	3.66	2-1	a6F-116°
3645.387	A	200	0.33	3.72	2-3	(35) 123°
3369.455	A	200	0.33	3.99	2-1	145°
3305.185	A	200	0.33	4.07	2-2	150°
4854.365	A	150	0.38	2.92	5-4	a8F-15°
4829.568	A	250	0.38	2.93	5-4	(36) 16°
4642.235	A	500	0.38	3.04	5-5	25°
4593.544	A	150	0.38	3.06	5-5	28°
4434.323	A	400	0.38	3.16	5-4	43°
4421.138	A	200	0.38	3.17	5-6	a8F-44°
4368.031	A	150d	0.38	3.20	5-6	(37) 46°
4347.801	A	400	0.38	3.22	5-4	49°
4262.677	A	300	0.38	3.27	5-5	56°
4256.393	A	400	0.38	3.28	5-6	57°
4206.128	A	100	0.38	3.31	5-4	a8F-63°
3983.138	A	200	0.38	3.48	5-5	(38) 91°
3922.397	A	800	0.38	3.52	5-5	98°
3780.927	A	150	0.38	3.64	5-5	112°
3718.877	A	500	0.38	3.70	5-5	z8G°

Sm II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3662.905	A	200	0.38	3.75	5-4	a8F-125°
3592.603	A	1500	0.38	3.81	5-6	(39) z8G°
3402.464	A	500	0.38	4.00	5-4	146°
•3384.658	A	300	0.38	4.02	5-5	147°
3354.185	A	150	0.38	4.06	5-4	149°
3344.353	A	200	0.38	4.07	5-4	151°
3321.179	A	800	0.38	4.09	5-5	a8F-153°
3272.807	A	200	0.38	4.15	5-5	(40) 155°
3253.943	A	200	0.38	4.17	5-5	157°
3215.262	A	200	0.38	4.22	5-6	162°
3196.182	A	150	0.38	4.24	5-5	164°
•3187.216	A	300	0.38	4.25	5-5	166°
4961.936	A	250	0.43	2.92	3-4	a6F-15°
4816.012	A	100	0.43	2.99	3-4	(41) 21°
4717.718	A	150	0.43	3.05	3-3	27°
4523.912	A	250	0.43	3.16	3-4	43°
4433.885	A	300	0.43	3.22	3-4	49°
4373.462	A	100	0.43	3.25	3-2	a6F-54°
4286.640	A	100	0.43	3.31	3-4	(42) 63°
4234.573	A	200	0.43	3.35	3-3	71°
4203.051	A	125	0.43	3.37	3-2	76°
4068.334	A	100	0.43	3.47	3-3	z8G°
3971.397	A	300	0.43	3.54	3-2	a6F-100°
3843.500	A	200	0.43	3.64	3-3	(43) 113°
3831.501	A	400	0.43	3.65	3-4	114°
3800.370	A	100	0.43	3.68	3-4	118°
•3774.294	A	150	0.43	3.70	3-2	122°
•3756.411§	A	600	0.43	3.72	3-3	a6F-123°
3535.653	A	150	0.43	3.92	3-3	(44) 139°
3396.187	A	250	0.43	4.07	3-2	150°
4834.618	A	100	0.48	3.04	6-5	a8F-25°
4595.291	A	250	0.48	3.17	6-6	(45) 44°
4537.952	A	200	0.48	3.20	6-6	46°
4424.339	A	600	0.48	3.27	6-5	56°
4362.040	A	300	0.48	3.31	6-5	64°
4350.465	A	300d	0.48	3.32	6-7	a8F-65°
4280.789	A	400	0.48	3.37	6-7	(46) 75°
4123.956	A	150	0.48	3.48	6-5	91°
3885.286	A	1000	0.48	3.66	6-6	115°
3767.358	A	200	0.48	3.76	6-6	126°
3706.752	A	300	0.48	3.81	6-6	a8F-z8G°
3649.527	A	500	0.48	3.76	6-6	(47) 126°
3604.285	A	800	0.48	3.91	6-7	128°
3568.271	A	1500	0.48	3.94	6-7	z8G°
3418.514	A	500	0.48	4.09	6-5	153°
3347.298	A	150	0.48	4.17	6-5	a8F-157°
•3306.388	A	500	0.48	4.23	6-6	(48) 162°
•3301.678	A	100	0.48	4.23	6-6	163°
3286.229	A	300	0.48	4.24	6-5	164°
3276.747	A	200	0.48	4.25	6-5	166°
3239.657	A	300	0.48	4.29	6-6	168°
4948.627	A	150	0.54	3.04	4-5	a6F-25°
4713.057	A	150	0.54	3.16	4-4	(49) 43°
4615.441	A	150	0.54	3.22	4-4	49°
4519.633	A	200	0.54	3.27	4-5	56°
4454.629	A	200	0.54	3.31	4-5	64°
•4220.659	A	200	0.54	3.47	4-3	a6F-z8G°
4188.128	A	200	0.54	3.49	4-3	(50) 93°
•4178.019	A	100d	0.54	3.50	4-4	94°
•4155.217	A	100	0.54	3.51	4-3	97°
4107.387	A	200	0.54	3.55	4-4	101°
4075.845	A	250	0.54	3.57	4-4	a6F-103°
3979.200	A	150	0.54	3.64	4-3	(51) 113°
3826.202	A	400	0.54	3.77	4-4	127°
•3760.694	A	500	0.54	3.82	4-4	173°
3650.998	A	150	0.54	3.92	4-4	138°
3389.325	A	200	0.54	4.18	4-3	a6F-159°
3371.209	A	150	0.54	4.20	4-3	(52) 161°
3333.635	A	150	0.54	4.24	4-4	165°
3288.784	A	200	0.54	4.36	4-	171°
4913.248	A	150	0.66	3.17	5-6	a6F-44°
4847.760	A	200	0.66	3.20	5-6	(53) 46°
4718.329	A	150	0.66	3.27	5-5	56°
4467.342	A	500	0.66	3.42	5-6	84°
4378.236	A	150	0.66	3.48	5-5	91°
4236.745	A	250	0.66	3.57	5-4	103°
4153.332	A	100	0.66	3.63	5-4	a8F-110°
4118.551	A	400	0.66	3.65	5-4	(54) 114°
4082.600	A	100d	0.66	3.68	5-4	118°
3728.469	A	400	0.66	3.97	5-6	143°
3467.874	A	100	0.66	4.22	5-6	162°
3440.502	A	100	0.66	4.24	5-4	165°
7082.77	A	400d	0.88	2.62	1- 1	a8H-1°
6862.82	A	100d	0.88	2.68	1-1	(55) 5°
6790.00	A	200d	0.93	2.75	2-2	a8H-8°
5116.700	A	100d	0.93	3.34	2-1	(56) z8G°
•7039.22	A	600d	0.99	2.75	3-2	a8H-8° (57)
7042.24	A	500d	1.07	2.82	4-3	a8H-12°
6856.03	A	400d	1.07	2.87	4-3	(58) 14°

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Sm II continued						
7030.44	A	800d	1.16	2.92	5½-4½	a^8H-15°
6731.84	A	500d	1.16	2.99	5½-4½	(59) 21°
6473.34	A	300d	1.37	3.28	7½-6½	a^8H-57° (60)
8032.03	A	250d	1.41	2.94	3½-2½	a^8G-17°
*7039.22	A	600d	1.41	3.16	3½-4½	(61) 43°
6569.31	A	1000d	1.49	3.37	8½-7½	a^8H-75° (62)
8025.12	A	400	1.51	3.05	3½-3½	b^8F-27° (63)
8510.90	A	200d	1.59	3.04	4½-5½	b F-25°
8348.68	A	150d	1.59	3.06	4½-5½	(64) 28°
7837.27	A	400	1.59	3.16	4½-4½	43°
7928.14	A	800	1.60	3.16	3½-4½	a^8P-43° (65)
8485.99	A	400d	1.68	3.13	6½-5½	a^8G-38° (66)
8048.70	A	400d	1.74	3.27	6½-5½	b^8F-56°
8026.32	A	500d	1.74	3.28	6½-6½	(67) 57°
8068.46	A	800	1.74	3.27	4½-5½	a^8P-56° (68)
8305.79	A	500d	1.79	3.28	7½-6½	a^8G-57°
7835.08	A	400d	1.79	3.37	7½-7½	(69) 75°

Strongest Unclassified Lines of Sm II

4515.094	A	150	III
4478.657	A	125	IV
4444.259	A	150	IV
4352.101	A	200	IV
4281.009	A	100	III
3962.995	A	200d	III
3959.527	A	100	III
3903.417	A	500	III
3875.193	A	100	III
3854.209	A	300	III
3848.779	A	200d	IV
3797.730	A	600	III
3780.763	A	200	III
3778.136	A	400	III
3767.755	A	150	III
3758.968	A	200	III
3757.529	A	300	III
3741.288	A	300	III
3739.117	A	300	III
3737.141	A	200	III
3721.847	A	400	III
3712.109	A	100	III
3706.979	A	200	IV
3700.922	A	150	IV
3677.793	A	200	III
3670.677	A	150	III
3662.693	A	200	IV
3656.221	A	200	IV
3638.767	A	400	IV
3631.136	A	400	III
3580.941	A	200	III
3566.836	A	150	III
3559.101	A	300d	III
3418.151	A	300	IV
3408.676	A	400	IV
3365.863	A	400	III
3350.875	A	200	IV
3348.683	A	200	IV
3343.494	A	200	IV
3325.258	A	300	IV
3316.579	A	300	IV
3307.017	A	500	IV
3298.104	A	500	III
3273.483	A	500	III
3253.401	A	300	IV
3236.638	A	500	IV
3218.614	A	300	IV
3211.734	A	400	IV
3193.014	A	300	IV
3183.916	A	400	IV
3152.525	A	300	IV

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Eu I I P 5.64 Anal A List D Apr 1942						
4594.03//	A	10000R	0.00	2.69	3½-4½	a^8S^o-y^8P
4627.22	A	8000R	0.00	2.67	3½-3½	(1)
4661.88	A	7000R	0.00	2.65	3½-2½	
Eu II I P 11.21 Anal B List C May 1942						
3819.67//	A	6000R	0.00	3.23	4-5	a^9S^o-z^9P
4129.73	A	5000r	0.00	2.99	4-4	(1)
4205.05	A	6000r	0.00	2.93	4-3	
3724.94	A	4000	0.00	3.31	4-4	a^9S^o-z^7P
3688.42	A	1500	0.00	3.35	4-3	(2)
2991.33	A	300	0.00	4.13	4-5	a^9S^o-z^9D
3077.358	A	200	0.00	4.01	4-4	(3)
3173.607	A	100	0.00	3.89	4-3	
4435.58	A	3000	0.21	2.99	3-4	a^7S^o-z^9P
4533.59	A	2000	0.21	2.93	3-3	(4)
3971.98	A	4000r	0.21	3.31	3-4	a^7S^o-z^7P
3930.50	A	4000r	0.21	3.35	3-3	(5)
3907.10	A	3000r	0.21	3.36	3-2	
3097.45	A	100	0.21	4.19	3-2	a^7S^o-103 (6)
3054.94	A	600	0.21	4.25	3-3	a^7S^o-y^9P† (7)
6645.11	A	8000	1.37	3.23	6-5	a^9D^o-z^9P
7370.22	A	3500	1.31	2.99	5-4	(8)
7426.57	A	1500	1.27	2.93	4-3	
6437.64	A	4000	1.31	3.23	5-5	
7194.81	A	1500	1.27	2.99	4-4	
7301.17	A	2500	1.24	2.93	3-3	
6303.41	A	2000	1.27	3.23	4-5	
7077.10	A	3000	1.24	2.99	3-4	
7317.55	A	1500	1.23	2.93	2-3	
6173.05	A	2000	1.31	3.31	5-4	a^9D^o-z^7P†
6049.51	A	2000	1.27	3.31	4-4	(9)
5872.98	A	500	1.24	3.35	3-3	
5966.07	A	1200	1.24	3.31	3-4	
5818.74	A	1000	1.23	3.35	2-3	
*3917.29 §	A	60	1.37	4.52	6-5	a^9D^o-y^9P†
4017.58	A	100	1.31	4.39	5-4	(10)
4151.52	A	20	1.27	4.25	4-3	
*3964.90 §	A	60	1.27	4.39	4-4	
4112.04	A	30	1.24	4.25	3-3	
3928.87	A	15	1.24	4.39	3-4	
4085.38	A	40	1.23	4.25	2-3	
3741.31	A	400	1.37	4.67	6-5	a^9D^o-x^9P†
3761.13	A	300	1.31	4.60	5-4	(11)
3799.009	A	100	1.27	4.52	4-3	
3674.634	A	50	1.31	4.67	5-5	
3714.904	A	100	1.27	4.60	4-4	
3765.93	A	150	1.24	4.52	3-3	
3683.267	A	40	1.24	4.60	3-4	
3743.556	A	100	1.23	4.52	2-3	
3713.45	A	125	1.24	4.57	3-2	a^9D^o-115 (12)
3508.852	A	20	1.31	4.83	5-4	a^9D^o-y^7P
3508.731	A	10	1.27	4.79	4-3	(13)
3646.75	A	35	1.23	4.61	2-2	
3440.999	A	80	1.24	4.83	3-4	
3461.38	A	80	1.23	4.79	2-3	
3710.870	A	80	1.31	4.64	5-6	a^9D^o-116† (14)
3611.57	A	100	1.27	4.69	4-4	a^9D^o-121† (15)
3603.20	A	200	1.27	4.70	4-4	a^9D^o-122† (16)
3391.989	A	100	1.24	4.88	3-4	a^9D^o-x^7P†
3542.152	A	80	1.23	4.71	2-2	(17)
3622.54	A	150	1.37	4.78	6-7	a^9D^o-125 (18)
3552.516	A	100	1.31	4.79	5-5	a^9D^o-126† (19)
3369.055	A	200	1.31	4.98	5-6	a^9D^o-131
3425.022	A	80	1.37	4.98	6-6	(20)
3321.857	A	100	1.37	5.09	6-5	a^9D^o-134 (21)
4355.09	A	300	3.23	6.06	5-4	z^9P-e^9S^o
4011.68	A	100	2.99	6.06	4-4	(22)
3943.08	A	40	2.93	6.06	3-4	
3380.25	A	100	2.99	6.64	4-4	z^9P-1° (23)
3521.09	A	100	3.23	6.74	5-6	z^9P-e^9D^o†
3301.95	A	150	2.99	6.73	4-5	(24)
3266.39	A	200	2.93	6.71	3-4	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Eu II continued						
3531.151	A	60	3.23	6.73	5-5	z^9P-e^9D^o†
3313.33	A	400	2.99	6.71	4-4	(24)
3272.77	A	400	2.93	6.71	3-3	cont
3319.89	A	80	2.99	6.71	4-3	
3277.78	A	600	2.93	6.70	3-2	
3308.02	A	200	2.99	6.72	4-5	z^9P-e^7D^o† (25)
4485.15	A	100	3.31	6.06	4-4	z^7P-e^9S^o† (26)
4383.17	A	200	3.31	6.13	4-3	z^7P-e^7S^o†
4464.97	A	200	3.36	6.13	2-3	(27)
3616.152	A	100	3.31	6.73	4-5	z^7P-e^9D^o†
3673.19	A	80	3.35	6.71	3-3	(28)
3678.259	A	100	3.36	6.72	2-1	z^7P-e^7D^o† (29)
3396.58	A	200	3.31	6.95	4-5	z^7P-f^7D^o† (30)

Strongest Unclassified Lines of Eu II

3861.18	A	80	V
3815.495	A	80	V
3738.08	A	80	V
3717.69	A	80	V
3687.78	A	80	V
3679.500	A	80	V
3390.783	A	80	V
3130.73	A	80	V

Gd I I P 6.16 Anal C List D June 1943						
7168.37	A	3000	0.21	1.93	6-5	a^9D^o-z^9P†
7733.50	A	1500	0.12	1.72	5-4	(1)
6730.73	A	1500	0.12	1.96	5-6	a^9D^o-$z^{11}F$†
6828.25	A	1500	0.07	1.87	4-5	(2)
6916.57	A	2000	0.03	1.81	3-4	
6991.92	A	1500	0.00	1.77	2-3	
5856.22	A	4000	0.12	2.23	5-6	a^9D^o-z^9F†
5696.22	A	8000	0.07	2.23	4-5	(3)
5643.24	A	6000	0.03	2.21	3-4	
5617.91	A	4000	0.00	2.20	2-3	
6114.07	A	2000	0.21	2.23	6-6	
5851.63	A	5000	0.12	2.23	5-5	
5632.25	A	2500	0.00	2.19	2-2	
5791.38	A	4000	0.07	2.20	4-3	
5701.35	A	2500	0.03	2.19	3-2	
4325.850//	A	3000	0.21	3.13	6-7	a^9D^o-y^9F†
4346.458	A	1500	0.12	2.96	5-5	(4)
4313.845	A	2000	0.03	2.89	3-3	
4308.340	A	1500	0.00	2.87	2-2	
4175.538	A	2000	0.21	3.17	6-6	a^9D^o-y^9D†
4053.642	A	2500	0.12	3.17	5-6	(5)
4078.700	A	3000	0.07	3.09	4-5	
4058.219	A	2500	0.03	3.07	3-4	
5015.04	A	1500	1.05	3.51	8-9	$a^{11}F^o$-$z^{11}G$†
5103.45	A	2000	0.98	3.40	7-8	(6)
5155.845	A	1500	0.92	3.32	6-7	
5197.768	A	1200	0.88	3.25	5-6	
5219.40	A	2000	0.84	3.20	4-5	
5255.805	A	1500	0.81	3.16	3-4	
5251.180	A	2000	1.05	3.40	8-8	
5283.076	A	3000	0.98	3.32	7-7	
5301.67	A	4000	0.92	3.25	6-6	
5307.30	A	4000	0.88	3.20	5-5	
5321.777	A	4000	0.84	3.16	4-4	
5302.76	A	3000	0.81	3.14	3-3	
5321.496	A	2000	0.79	3.11	2-2	
5348.67	A	2000	0.79	3.09	2-1	
5350.38	A	4000	1.54	3.85	7-8	a^9F^o-z^9G†
5353.26	A	3000	1.46	3.77	6-7	(7)
5343.00	A	3000	1.39	3.70	5-6	
5333.30	A	2000	1.34	3.66	4-5	

Gd II I P ? Anal C List B Sept 1943						
3763.00	A	50	0.24	3.53	6½-5½	$a^{10}D^o$-$z^{10}P$
3952.00	A	300	0.14	3.27	5½-4½	(1)
3993.213	A	200	0.08	3.17	4½-3½	
3656.152	A	1500	0.14	3.53	5½-5½	
3871.54	A	80	0.08	3.27	4½-4½	
3934.824	A	300?	0.03	3.17	3½-3½	
3587.186	A	40	0.08	3.53	4½-5½	
3816.64	A	250	0.03	3.27	3½-4½	
3894.696	A	2000	0.00	3.17	2½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
3423.466	A	10000	0.24	3.84	6½-7½	$a^{10}D^o-z^{10}F$ (2)
3545.797	A	3000	0.14	3.62	5½-6½	
3671.20	A	1500	0.08	3.44	4½-5½	
3716.36	A	1000	0.03	3.35	3½-4½	
3759.00	A	300	0.00	3.28	2½-3½	
3646.19	A	3000	0.24	3.62	6½-6½	
3743.47	A	2000	0.14	3.44	5½-5½	
3768.39	A	2000	0.08	3.35	4½-4½	
3796.37	A	2500	0.03	3.28	3½-3½	
3813.97	A	2000	0.00	3.24	2½-2½	
3855.56	A	200	0.24	3.44	6½-5½	
3844.579	A	500	0.14	3.35	5½-4½	
3850.69	A	800	0.08	3.28	4½-3½	
3852.45	A	1000	0.03	3.24	3½-2½	
3850.97	A	1200	0.00	3.20	2½-1½	
3988.261	A	80	0.14	3.25	5½-4½	$a^{10}D^o-z^{8}P$ (3)
3887.157	A	40	0.08	3.25	4½-4½	
3831.80	A	100	0.03	3.25	3½-4½	
3367.093	A	100	0.14	3.81	5½-4½	$a^{10}D^o-z^{8}P$ (4)
3654.62	A	2000d	0.08	3.46	4½-3½	
3697.73	A	1000	0.03	3.37	3½-2½	
3308.517	A	80	0.08	3.81	4½-4½	
3605.665	A	100	0.03	3.46	3½-3½	
3662.26	A	800	0.00	3.37	2½-2½	
3268.335	A	400	0.03	3.81	3½-4½	
3571.933	A	300	0.00	3.46	2½-3½	
3732.45	A	100	0.08	3.38	4½-3½	$a^{10}D^o-3$ (5)
3524.196	A	1000	0.03	3.53	3½-2½	$a^{10}D^o-4$ (6)
3491.954	A	2000	0.00	3.53	2½-2½	
3439.990	A	6000	0.24	3.83	6½-8½	$a^{10}D^o-z^{10}D$ (7)
3454.145	A	1500	0.14	3.73	5½-5½	
3518.632	A	30	0.08	3.59	4½-4½	
3449.616	A	800	0.03	3.61	3½-3½	
•3423.92 §	A	1500	0.00	3.60	2½-3½	
3549.365	A	3000	0.24	3.72	6½-5½	
3584.962	A	3000	0.14	3.59	5½-4½	
3494.404	A	3000	0.08	3.51	4½-3½	
3454.904	A	2000	0.03	3.60	3½-2½	
3350.474	A	10000	0.14	3.83	5½-8½	
3392.530	A	2000	0.08	3.72	4½-5½	
3473.219	A	2000	0.03	3.59	3½-4½	
3418.733	A	2000	0.00	3.61	2½-3½	
3462.997	A	200	0.14	3.71	5½-4½	$a^{10}D^o-z^{8}D$† (8)
3365.591	A	400	0.03	3.70	3½-2½	
3345.985	A	2000	0.00	3.69	2½-1½	
3422.751	A	500	0.14	3.75	5½-5½	
3401.067	A	300	0.08	3.71	4½-4½	
3360.711	A	1000	0.03	3.70	3½-3½	
3336.180	A	2500	0.00	3.70	2½-2½	
3382.233	A	10000	0.08	3.75	4½-5½	
3358.620	A	8000	0.03	3.71	3½-4½	
3331.383	A	4000	0.00	3.70	2½-3½	
3196.532	A	150	0.08	3.94	4½-3½	$a^{10}D^o-z^{6}P$† (9)
3052.511	A	50	0.00	4.04	2½-2½	
3133.094	A	150	0.00	3.94	2½-3½	
3161.369	A	2500	0.24	4.14	6½-6½	$a^{10}D^o-z^{8}F$ (10)
3145.00	A	2500	0.14	4.07	5½-5½	
3119.08	A	60	0.08	4.03	4½-4½	
3101.911	A	250d	0.03	4.01	3½-3½	
3098.899	A	300	0.00	3.98	2½-2½	
3223.740	A	1000†	0.24	4.07	6½-5½	
3171.09	A	125	0.14	4.03	5½-4½	
3138.094	A	80	0.08	4.01	4½-3½	
3124.350	A	150	0.03	3.98	3½-2½	
3119.336	A	25	0.00	3.98	2½-1½	
3085.621	A	60	0.14	4.14	5½-6½	
3093.846	A	25	0.08	4.07	4½-5½	
3083.350	A	200	0.03	4.03	3½-4½	
3076.925	A	2000	0.00	4.01	2½-3½	
•3160.69 §	A	200	0.08	3.98	4½-3½	$a^{10}D^o-y\ P$† (11)
3135.034	A	200	0.03	3.97	3½-2½	
3156.532	A	2000	0.08	3.99	4½-4½	
3123.989	A	1000	0.03	3.98	3½-3½	
3119.941	A	800	0.03	3.99	3½-4½	
3098.644	A	800	0.00	3.98	2½-3½	
3100.504	A	10000	0.24	4.22	6½-5½	$a^{10}D^o-y^{10}P$ (12)
3081.993	A	8000	0.14	4.15	5½-4½	
3068.643	A	4000	0.08	4.10	4½-3½	
3027.602	A	8000	0.14	4.22	5½-5½	
3032.845	A	10000	0.08	4.15	4½-4½	
3034.051	A	8000	0.03	4.10	3½-3½	
2980.154	A	8000	0.08	4.22	4½-5½	
2999.045	A	8000	0.03	4.15	3½-4½	
3010.129	A	8000	0.00	4.10	2½-3½	
4508.931	A	60	0.42	3.16	3½-4½	$a^{8}D^o-1$† (13)
4225.148	A	100	0.60	3.52	5½-5½	$a^{8}D^o-z^{10}P$† (14)
4446.487	A	250	0.49	3.27	4½-4½	
4494.853	A	25	0.42	3.17	3½-3½	
4341.282	A	600	0.42	3.27	3½-4½	
4428.151	A	80	0.38	3.17	2½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
4078.444	A	1200	0.80	3.62	5½-6½	$a^{8}D^o-z^{10}F$ (15)
4184.252	A	2000	0.49	3.44	4½-5½	
4212.001	A	800	0.42	3.35	3½-4½	
4251.733	A	2000	0.38	3.28	2½-3½	
4280.490	A	1500	0.35	3.24	1½-2½	
4342.179	A	1500	0.60	3.44	5½-5½	
4310.981	A	200	0.49	3.35	4½-4½	
4322.195	A	125	0.38	3.24	2½-2½	
•4327.125§	A	1500	0.35	3.20	1½-1½	
4478.795	A	250	0.60	3.35	5½-4½	
4419.032	A	800	0.49	3.28	4½-3½	
4387.674	A	300	0.42	3.24	3½-2½	
4369.771	A	500	0.38	3.20	2½-1½	
4360.917	A	250	0.42	3.25	3½-4½	$a^{8}D^o-2$ (16)
3843.80	A	25	0.60	3.81	5½-4½	$a^{8}D^o-z^{8}P$† (17)
4168.732	A	500	0.49	3.46	4½-3½	
4188.099	A	60	0.42	3.37	3½-2½	
3719.53	A	300	0.49	3.81	4½-4½	
4070.390	A	200	0.42	3.46	3½-3½	
3645.62	A	300	0.42	3.81	3½-4½	
4013.953	A	60	0.38	3.46	2½-3½	
4167.159	A	40	0.42	3.38	3½-3½	$a^{8}D^o-3$† (18)
3822.17	A	80	0.60	3.83	5½-6½	$a^{8}D^o-z^{10}D$† (19)
3826.05	A	200	0.49	3.72	4½-5½	
3902.398	A	1000	0.42	3.59	3½-4½	
3957.872	A	1000	0.80	3.72	5½-5½	
3987.214	A	600	0.49	3.59	4½-4½	
3878.62	A	60	0.42	3.61	3½-3½	
•4130.372	A	3000	0.60	3.59	5½-4½	
3916.508	A	3000	0.60	3.75	5½-5½	$a^{8}D^o-z^{8}D$† (20)
3838.91	A	300	0.49	3.71	4½-4½	
3760.92	A	100	0.42	3.70	3½-3½	
3699.73	A	800	0.35	3.69	1½-1½	
3969.293	A	300	0.60	3.71	5½-4½	
3839.64	A	300	0.49	3.70	4½-3½	
3767.04	A	500	0.42	3.70	3½-2½	
3730.84	A	1000	0.38	3.69	2½-1½	
3787.56	A	400	0.49	3.75	4½-5½	
3758.31	A	200	0.43	3.71	3½-4½	
3712.70	A	2000	0.38	3.70	2½-3½	
3687.74	A	800	0.35	3.70	1½-2½	
3578.598	A	30	0.49	3.94	4½-3½	$a^{8}D^o-z^{6}P$† (21)
3409.297	A	500	0.42	4.04	3½-2½	
3331.348	A	30	0.38	4.10	2½-1½	
3510.133	A	30	0.42	3.94	3½-3½	
•3369.818	A	400	0.38	4.04	2½-2½	
3296.688	A	30	0.35	4.10	1½-1½	
3468.083	A	200	0.38	3.94	2½-3½	
3481.275	A	5000	0.60	4.14	5½-6½	$a^{8}D^o-z^{8}F$† (22)
3450.376	A	4000	0.49	4.07	4½-5½	
3416.948	A	2500	0.42	4.03	3½-4½	
3399.406	A	500	0.38	4.01	2½-3½	
3399.991	A	1200	0.35	3.98	1½-2½	
3557.053	A	1000	0.60	4.07	5½-5½	
3481.797	A	3000	0.49	4.03	4½-4½	
3439.784	A	1500	0.42	4.01	3½-3½	
3424.592	A	1200	0.35	3.96	1½-1½	
3590.468	A	100	0.60	4.03	5½-4½	
3505.512	A	2000	0.49	4.01	4½-3½	
3467.267	A	3500	0.42	3.98	3½-2½	
3451.233	A	2000	0.38	3.96	2½-1½	
3432.994	A	1500	0.35	3.95	1½- ½	
•3640.18 §	A	50	0.60	3.99	5½-4½	$a^{8}D^o-y^{8}P$† (23)
3480.547	A	60	0.42	3.97	3½-2½	
3528.545	A	300	0.49	3.99	4½-4½	
3466.952	A	600	0.42	3.98	3½-3½	
3439.208	A	3000	0.38	3.97	2½-2½	
•3461.952§	A	300	0.42	3.99	3½-4½	
3425.930	A	600	0.38	3.98	2½-3½	
3412.753	A	80	0.35	3.97	1½-2½	
3407.81	A	1500†	0.60	4.22	5½-5½	$a^{8}D^o-y^{10}P$ (24)
3374.688	A	300	0.49	4.15	4½-4½	
3356.513	A	80	0.42	4.10	3½-3½	
3419.069	A	50	0.49	4.10	4½-3½	
3309.582	A	60	0.49	4.22	4½-5½	
3313.731	A	600	0.42	4.15	3½-4½	
3318.055	A	100	0.38	4.10	2½-3½	
3161.838	A	40	0.60	4.50	5½-5½	$a^{8}D^o-y^{8}D$† (25)
3003.583	A	150	0.42	4.53	3½-3½	
2960.926	A	500	0.38	4.55	2½-2½	
3143.131	A	400	0.80	4.52	5½-4½	
3053.570	A	800	0.49	4.53	4½-3½	
2991.520	A	150	0.42	4.55	3½-2½	
3077.077	A	800	0.49	4.50	4½-5½	
3009.366	A	60	0.42	4.52	3½-4½	
2972.742	A	150	0.38	4.53	2½-3½	
3028.981	A	200	0.60	4.87	5½-4½	$a^{8}D^o-7$† (26)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
3009.650	A	150	0.60	4.70	5½-4½	$a^{8}D^o-8$† (27)
2969.267	A	50	0.60	4.75	5½-5½	$a^{8}D^o-8$ (28)
2965.428	A	400	0.60	4.76	5½-5½	$a^{8}D^o-z^{6}F$†
3012.190	A	600	0.60	4.69	5½-4½	(29)
4510.380	A	30d?	0.43	3.16	3½-4½	$a^{8}S^o-1$ (30)
4344.487	A	40	0.43	3.27	3½-4½	$a^{8}S^o-z^{10}P$
4498.276	A	300	0.43	3.17	3½-3½	(31)
4215.023	A	600	0.43	3.35	3½-4½	$a^{8}S^o-z^{10}F$
4390.953	A	300	0.43	3.24	3½-2½	(32)
4364.140	A	25	0.43	3.25	3½-4½	$a^{8}S^o-3$ (33)
4073.195	A	400	0.43	3.46	3½-3½	$a^{8}S^o-z^{8}P$†
4191.067	A	800	0.43	3.37	3½-2½	(34)
•4170.108§	A	150	0.43	3.38	3½-3½	$a^{8}S^o-3$ (35)
3881.84	A	50	0.43	3.60	3½-2½	$a^{8}S^o-z^{10}D$† (36)
3760.71	A	200	0.43	3.71	3½-4½	$a^{8}S^o-z^{8}D$
3763.33	A	60	0.43	3.70	3½-3½	(37)
3769.45	A	100	0.43	3.70	3½-2½	
3512.219	A	800	0.43	3.94	3½-3½	$a^{8}S^o-z^{6}P$† (38)
3441.790	A	400	0.43	4.01	3½-3½	$a^{8}S^o-z^{8}F$†
3469.307	A	100	0.43	3.98	3½-2½	(39)
3463.984	A	5000	0.43	3.99	3½-4½	$a^{8}S^o-y^{8}P$
3468.989	A	3000	0.43	3.98	3½-3½	(40)
3482.602	A	800	0.43	3.97	3½-2½	
3315.590	A	400	0.43	4.15	3½-4½	$a^{8}S^o-y^{10}P$
3358.434	A	300	0.43	4.10	3½-3½	(41)
3010.899	A	250	0.43	4.52	3½-4½	$a^{8}S^o-y^{8}D$
2993.038	A	500	0.43	4.55	3½-2½	(42)
4734.427	A	100	0.66	3.27	5½-4½	$a^{10}F^o-z^{10}P$†
4802.575	A	80	0.60	3.17	4½-3½	(43)
4316.052	A	600	0.66	3.52	5½-5½	
4627.66	A	40	0.60	3.27	4½-4½	
4719.040	A	60	0.55	3.17	3½-3½	
4227.140	A	200	0.60	3.52	4½-5½	
4073.759	A	1500	0.82	3.84	7½-7½	$a^{10}F^o-z^{10}F$†
•4262.092§	A	2500	0.73	3.52	6½-6½	(44)
4438.366	A	150	0.66	3.44	5½-5½	
4481.056	A	300	0.60	3.35	4½-4½	
4521.296	A	100	0.55	3.28	3½-3½	
4558.080	A	250	0.50	3.20	2½-2½	
4394.719	A	25	0.82	3.62	7½-6½	
4550.954	A	150	0.73	3.44	6½-5½	
4581.086	A	200	0.66	3.35	5½-4½	
•4597.91 §	A	500	0.60	3.28	4½-3½	
4601.05	A	500	0.55	3.24	3½-2½	
4596.978	A	400	0.52	3.20	2½-1½	
3959.523	A	500?	0.73	3.84	6½-7½	
•4163.092§	A	250	0.86	3.62	5½-6½	
4344.300	A	100	0.60	3.44	4½-5½	
4408.248	A	400	0.55	3.35	3½-4½	
•4466.547§	A	500	0.52	3.28	2½-3½	
4506.333	A	200	0.50	3.24	1½-2½	
4757.791	A	80	0.66	3.25	5½-4½	$a^{10}F^o-2$† (45)
4321.110	A	200	0.60	3.46	4½-3½	$a^{10}F^o-z^{8}P$†
4382.061	A	60	0.55	3.37	3½-2½	(46)
4253.368	A	800	0.55	3.46	3½-3½	
4330.606	A	600	0.52	3.37	2½-2½	
3791.72	A	30	0.55	3.81	3½-4½	
4204.857	A	300	0.52	3.46	2½-3½	
4296.076	A	1000	0.50	3.37	1½-2½	
•4359.152	A	40	0.55	3.38	3½-3½	$a^{10}F^o-3$†
4308.233	A	40	0.52	3.38	2½-3½	(47)
4140.450	A	100	0.55	3.53	3½-2½	$a^{10}F^o-4$
4094.478	A	300	0.52	3.53	2½-2½	(48)
4063.59	A	200	0.50	3.53	1½-2½	
4098.606	A	3000	0.82	3.83	7½-6½	$a^{10}F^o-z^{10}D$†
•4130.372	A	3000	0.73	3.72	6½-5½	(49)
4217.195	A	500	0.66	3.59	5½-4½	
4098.900	A	400	0.60	3.61	4½-3½	
4045.148	A	100	0.55	3.60	3½-2½	
3983.008	A	80	0.73	3.83	6½-6½	
4037.332	A	1500	0.66	3.72	5½-5½	
4132.275	A	2000	0.60	3.59	4½-4½	
4037.897	A	1200	0.55	3.61	3½-3½	
4001.257	A	600	0.52	3.60	2½-2½	
3959.436	A	300?	0.60	3.72	4½-5½	
4070.288	A	600	0.55	3.59	3½-4½	
3994.165	A	800	0.52	3.61	2½-3½	
3971.754	A	300	0.50	3.60	1½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
4085.564	A	2000	0.73	3.75	6½-5½	$a^{10}F^o-z^8D$ †
4049.429	A	1200	0.66	3.71	5½-4½	(50)
3973.981	A	500	0.60	3.70	4½-3½	
3933.246	A	300	0.55	3.70	3½-2½	
3895.230	A	200	0.52	3.69	2½-1½	
3971.062	A	100	0.60	3.71	4½-4½	
m3916.61	P	Gd+	0.55	3.70	3½-3½	
3881.94	A	30	0.52	3.70	2½-2½	
3867.26	A	60	0.50	3.69	1½-1½	
3918.236	A	150	0.60	3.75	4½-5½	
3875.46	A	100	0.52	3.70	3½-3½	
3854.177	A	50	0.50	3.70	1½-2½	
3709.13	A	50	0.82	4.14	7½-6½	$a^{10}F^o-z^8F$ †
3576.772	A	25	0.50	3.95	1½- ½	(51)
*3614.21 §	A	100	0.73	4.14	6½-6½	
3591.912	A	30	0.60	4.03	4½-4½	
3569.566	A	40	0.55	4.01	3½-3½	
3567.654	A	40	0.50	3.96	1½-1½	
3543.768	A	500	0.66	4.14	5½-6½	
3558.468	A	250	0.60	4.07	4½-5½	
3544.985	A	60	0.55	4.03	3½-4½	
3593.445	A	60	0.55	3.99	3½-4½	$a^{10}F^o-y^8P$ †
3564.046	A	60	0.52	3.98	2½-3½	(52)
3554.802	A	30	0.50	3.97	1½-2½	
3466.498	A	150	0.66	4.22	5½-5½	$a^{10}F^o-y^{10}P$ †
						(53)
3193.174	A	200	0.66	4.52	5½-4½	$a^{10}F^o-y^8D$ †
3137.940	A	80	0.60	4.53	4½-3½	(54)
3089.204	A	30	0.55	4.55	3½-2½	
3212.274	A	50	0.66	4.50	5½-5½	
3162.764	A	25	0.60	4.50	4½-5½	
3108.230	A	30	0.55	4.52	3½-4½	
3040.34	A	150	0.60	4.66	4½-3½	$a^{10}F^o-6$
						(55)
3075.422	A	30	0.66	4.67	5½-4½	$a^{10}F^o-7$ †
						(56)
3058.119	A	80	0.66	4.69	5½-4½	$a^{10}F^o-z^6F$ †
2987.074	A	80	0.60	4.73	4½-3½	(57)
5860.73	A	1000	1.06	3.16	5½-4½	b^8D^o-1 †
						(58)
5010.821	A	400	1.06	3.52	5½-5½	$b^8D^o-z^{10}P$ †
6049.50	A	80	1.13	3.17	3½-3½	(59)
5583.68	A	800	1.06	3.27	5½-4½	
5956.48	A	200	1.10	3.17	4½-3½	
5096.063	A	200	1.10	3.52	4½-5½	
4805.817	A	100	1.06	3.62	5½-6½	$b^8D^o-z^{10}F$ †
5267.322	A	40	1.10	3.44	4½-5½	(60)
5176.285	A	800	1.06	3.44	5½-5½	
*5469.72 §	A	800	1.10	3.35	4½-4½	
5728.32	A	60	1.13	3.28	3½-3½	
5371.621	A	40	1.06	3.35	5½-4½	
5644.84	A	300	1.10	3.28	4½-3½	
5856.96	A	150	1.13	3.24	3½-2½	
6011.12	A	30	1.15	3.20	2½-1½	
5616.21	A	300	1.06	3.25	5½-4½	b^8D^o-3
						(61)
4483.328	A	300	1.06	3.81	5½-4½	$b^8D^o-z^8P$ †
4551.455	A	30	1.10	3.81	4½-4½	(62)
5304.923	A	25	1.13	3.46	3½-3½	
5357.790	A	50	1.15	3.46	2½-3½	
5394.321	A	125	1.10	3.38	4½-3½	b^8D^o-3 †
5470.53	A	50	1.13	3.38	3½-3½	(63)
4453.931	A	60	1.06	3.83	5½-6½	$b^8D^o-z^{10}D$
4711.975	A	80	1.10	3.72	4½-5½	(64)
5023.133	A	200	1.13	3.59	3½-4½	
*5020.368§	A	80	1.15	3.61	2½-3½	
5062.862	A	150	1.17	3.60	1½-2½	
*4639.001	A	200	1.06	3.72	5½-5½	
*4958.788§	A	800	1.10	3.59	4½-4½	
4973.896	A	30	1.13	3.61	3½-3½	
5031.562	A	80	1.15	3.60	2½-2½	
4878.049	A	30	1.06	3.59	5½-4½	
4910.838	A	50	1.10	3.61	4½-3½	
4984.905	A	60	1.13	3.60	3½-2½	
4582.53	A	400	1.06	3.75	5½-5½	$b^8D^o-z^8D$ †
4728.468	A	300	1.10	3.71	4½-4½	(65)
4791.150	A	40	1.13	3.70	3½-3½	
4894.30	A	600	1.17	3.69	1½-1½	
4654.986	A	100	1.06	3.71	5½-4½	
4732.60	A	600	1.10	3.70	4½-3½	
4801.05	A	500	1.13	3.70	3½-2½	
4865.02	A	400	1.15	3.69	2½-1½	
4786.908	A	150	1.13	3.71	3½-4½	
4834.232	A	300	1.15	3.70	2½-3½	
4873.339	A	150	1.17	3.70	1½-2½	
4427.606	A	60	1.15	3.94	2½-3½	$b^8D^o-z^6P$ †
						(66)
3997.764	A	300	1.06	4.14	5½-6½	$b^8D^o-z^8F$ †
4154.862	A	250	1.10	4.07	4½-5½	(67)
4246.568	A	150	1.13	4.03	3½-4½	
*4316.266	A	150	1.15	4.01	2½-3½	
4383.119	A	150	1.17	3.98	1½-2½	
4359.636	A	30	1.15	3.98	2½-2½	
4424.102	A	40	1.17	3.96	1½-1½	
4400.18	A	25	1.15	3.96	2½-1½	
4438.13	A	30	1.17	3.95	1½- ½	
4268.731	A	150	1.10	3.99	4½-4½	$b^8D^o-y^8P$ †
4324.064	A	150	1.13	3.98	3½-3½	(68)
4380.642	A	100	1.15	3.97	2½-2½	
*4316.266	A	150	1.13	3.99	3½-4½	
*4359.152	A	40	1.15	3.98	2½-3½	
3581.91	A	200	1.06	4.50	5½-5½	$b^8D^o-y^8D$
3600.963	A	200	1.10	4.52	4½-4½	(69)
3626.32	A	40	1.13	4.53	3½-3½	
3629.51	A	80	1.17	4.57	1½-1½	
3558.189	A	400	1.06	4.52	5½-4½	
*3593.709	A	1500d	1.10	4.53	4½-3½	
3608.753	A	200	1.13	4.55	3½-2½	
3613.392	A	150	1.15	4.57	2½-1½	
3625.26	A	60	1.10	4.50	4½-5½	
3634.757	A	100	1.13	4.52	3½-4½	
3650.95	A	100	1.15	4.53	2½-3½	
3649.44	A	80	1.17	4.55	1½-2½	
3412.583	A	60	1.06	4.67	5½-4½	b^8D^o-7 †
*3451.914§	A	25	1.10	4.67	4½-4½	(70)
3388.065	A	40	1.06	4.70	5½-4½	b^8D^o-8 †
						(71)
3336.984	A	200	1.06	4.75	5½-5½	b^8D^o-9
3374.584	A	50	1.10	4.75	4½-5½	(72)
3332.133	A	1000	1.06	4.76	5½-5½	$b^8D^o-z^6F$ †
3426.342	A	50	1.13	4.73	3½-3½	(73)
3412.020	A	200	1.15	4.77	2½-2½	
3403.081	A	150	1.17	4.79	1½-1½	
3391.294	A	150	1.06	4.69	5½-4½	
3390.498	A	30	1.13	4.77	3½-2½	
3388.912	A	100	1.15	4.79	2½-1½	
3390.878	A	200	1.17	4.81	1½- ½	
*3369.618	A	400	1.10	4.76	4½-5½	
3460.776	A	30	1.13	4.69	3½-4½	
3300.976	A	60	1.10	4.84	4½-3½	$b^8D^o-x^8P$ †
3292.310	A	800	1.10	4.85	4½-4½	(74)
3329.345	A	400	1.13	4.84	3½-3½	
3366.532	A	50	1.15	4.82	2½-2½	
3320.438	A	300	1.13	4.85	3½-4½	
3350.097	A	400	1.15	4.84	2½-3½	
3380.515	A	300	1.17	4.82	1½-2½	
3226.318	A	1000	1.06	4.88	5½-4½	$b^8D^o-z^6D$ †
3236.106	A	150	1.10	4.91	4½-3½	(75)
3242.834	A	50	1.13	4.93	3½-2½	
3249.747	A	40	1.15	4.95	2½-1½	
*3262.515	A	80	1.10	4.88	4½-4½	
3263.373	A	125	1.13	4.91	3½-3½	
*3262.515	A	80	1.15	4.93	2½-2½	
3289.150	A	100	1.13	4.88	3½-4½	
3102.551	A	1000	1.06	5.03	5½-6½	$b^8D^o-y^8F$ †
3133.852	A	1000	1.10	5.03	4½-5½	(76)
3145.516	A	800	1.13	5.05	3½-4½	
3146.878	A	250	1.15	5.07	2½-3½	
3142.900	A	300	1.17	5.09	1½-2½	
3101.407	A	50	1.06	5.03	5½-5½	
3120.181	A	125	1.10	5.05	4½-4½	
3128.560	A	200	1.13	5.07	3½-3½	
3130.812	A	200	1.15	5.09	2½-2½	
3129.955	A	100	1.17	5.11	1½-1½	
3117.974	A	40	1.15	5.11	2½-1½	
3131.760	A	80	1.17	5.12	1½- ½	
2975.110	A	30	1.13	5.28	3½-2½	$b^8D^o-y^6P$
2972.17	A	100	1.15	5.30	2½-1½	(77)
2985.531	A	100	1.13	5.26	3½-3½	
2983.060	A	60	1.17	5.30	1½-1½	
3002.197	A	50	1.15	5.26	2½-3½	
3002.710	A	60	1.17	5.28	1½-2½	
5586.16	A	100	1.25	3.46	4½-3½	$a^6D^o-z^8P$
						(78)
5871.81	A	30	1.28	3.38	3½-3½	a^6D^o-3 †
						(79)
5303.43	A	30	1.28	3.61	3½-3½	$a^6D^o-z^{10}D$ †
5230.297	A	300	1.31	3.61	2½-3½	(80)
5019.361	A	100	1.25	3.70	4½-3½	$a^6D^o-z^8D$ †
5107.406	A	60	1.28	3.70	3½-2½	(81)
4582.38	A	300	1.25	3.94	4½-3½	$a^6D^o-z^6P$ †
4471.29	A	200	1.28	4.04	3½-2½	(82)
4433.635	A	60	1.31	4.10	2½-1½	
4646.326	A	40	1.28	3.94	3½-3½	
4520.070	A	150	1.31	4.04	2½-2½	
4467.327	A	80	1.33	4.10	1½-1½	
4554.989	A	50	1.33	4.04	1½-2½	
4488.401	A	80	1.35	4.10	½-1½	
4374.343	A	30	1.25	4.07	4½-5½	$a^6D^o-z^8F$ †
4463.247	A	80	1.25	4.01	4½-3½	(83)
4731.273	A	50	1.33	3.95	1½- ½	
4570.977	A	40	1.28	3.98	3½-3½	$a^6D^o-y^8P$ †
4509.082	A	50	1.25	3.98	4½-3½	(84)
3791.17	A	300	1.25	4.50	4½-5½	$a^6D^o-y^8D$ †
3807.65	A	25	1.28	4.52	3½-4½	(85)
3764.60	A	50	1.25	4.52	4½-4½	
3755.56	A	40	1.25	4.53	4½-3½	
3641.39	A	125	1.28	4.67	3½-4½	a^6D^o-7 †
						(86)
3613.490	A	80	1.28	4.70	3½-4½	a^6D^o-8
						(87)
3517.890	A	60	1.25	4.75	4½-5½	a^6D^o-9
						(88)
3512.496	A	600	1.25	4.76	4½-5½	$a^6D^o-z^6F$ †
3617.164	A	200	1.28	4.69	3½-4½	(89)
3610.76	A	200	1.31	4.73	2½-3½	
*3592.709	A	1500d	1.33	4.77	1½-2½	
3580.618	A	40	1.35	4.79	½-1½	
3579.549	A	25	1.28	4.73	3½-3½	
*3567.116	A	30	(1.33	4.79	1½-1½	
			1.35	4.81	½- ½	
3553.716	A	40	1.33	4.81	1½- ½	
3428.467	A	500	1.25	4.85	4½-4½	$a^6D^o-x^8P$ †
3464.132	A	100?	1.28	4.85	3½-4½	(90)
3503.206	A	60	1.31	4.84	2½-3½	
3395.120	A	1000	1.25	4.88	4½-4½	$a^6D^o-z^6D$
*3402.072	A	1000	1.28	4.91	3½-3½	(91)
3407.56	A	600?	1.31	4.93	2½-2½	
3413.273	A	400	1.33	4.95	1½-1½	
3417.330	A	150	1.35	4.96	½- ½	
3367.661	A	150	1.25	4.91	4½-3½	
3379.756	A	400	1.28	4.93	3½-2½	
3393.630	A	400	1.31	4.95	2½-1½	
3405.038	A	150	1.33	4.96	1½- ½	
3430.338	A	40	1.31	4.91	2½-3½	
3427.362	A	80	1.33	4.93	1½-2½	
3425.624	A	50	1.35	4.95	½-1½	
3257.072	A	100	1.25	5.03	4½-5½	$a^6D^o-y^8F$ †
3274.183	A	300	1.28	5.05	3½-4½	(92)
3281.607	A	200	1.31	5.07	2½-3½	
3282.305	A	400?	1.33	5.09	1½-2½	
3279.529	A	200	1.35	5.11	½-1½	
3242.304	A	150	1.25	5.05	4½-4½	
3255.819	A	150	1.28	5.07	3½-3½	
3264.137	A	60	1.31	5.09	2½-2½	
3270.515	A	100	1.35	5.12	½- ½	
3234.297	A	60	1.25	5.07	4½-3½	
3238.621	A	300	1.28	5.09	3½-2½	
3250.187	A	300	1.31	5.11	2½-1½	
3259.250	A	250	1.33	5.12	1½- ½	
3072.565	A	1000	1.25	5.26	4½-3½	$a^6D^o-y^6P$ †
3089.954	A	400	1.28	5.28	3½-2½	(93)
3092.058	A	150	1.31	5.30	2½-1½	
3101.185	A	125	1.28	5.26	3½-3½	
3113.172	A	250	1.31	5.28	2½-2½	
3108.360	A	150	1.33	5.30	1½-1½	
3129.696	A	80	1.33	5.28	1½-2½	
3118.600	A	150	1.35	5.30	½-1½	
5877.26	A	1000	1.42	3.52	5½-5½	$a^{10}P^o-z^{10}P$
6634.36	A	1500	1.31	3.17	3½-3½	(94)
6681.23	A	1000	1.42	3.27	5½-4½	
6846.60	A	1200	1.37	3.17	4½-3½	
5733.86	A	4000	1.37	3.52	4½-5½	
6305.15	A	1500	1.31	3.27	3½-4½	
5597.21	A	200	1.42	3.62	5½-6½	$a^{10}P^o-z^{10}F$ †
5951.60	A	80	1.37	3.44	4½-5½	(95)
6106.19	A	100	1.42	3.44	5½-5½	
6727.83	A	125	1.42	3.25	5½-4½	$a^{10}P^o-2$
6346.65	A	400	1.31	3.25	3½-4½	(96)
5164.542	A	150	1.42	3.81	5½-4½	$a^{10}P^o-z^8P$ †
5987.11	A	150	1.31	3.37	3½-2½	(97)
5749.41	A	500	1.31	3.46	3½-3½	
5545.01	A	250	1.31	3.53	3½-2½	$a^{10}P^o-4$
						(98)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
5125.56	A	400	1.42	3.83	5½-6½	$a^{10}p^{o}-z^{10}D$ †
*5252.14 §	A	500	1.37	3.72	4½-5½	(99)
5419.876	A	150	1.31	3.59	3½-4½	
5372.316	A	300	1.42	3.73	5½-5½	
5560.69	A	600	1.37	3.59	4½-4½	
5500.43	A	600	1.37	3.61	4½-3½	
5375.393	A	100	1.31	3.60	3½-2½	
5393.659	A	100	1.42	3.71	5½-4½	$a^{10}p^{o}-z^{8}D$ †
5179.919	A	125	1.37	3.75	4½-5½	(100)
*4668.448§	A	40	1.37	4.01	4½-3½	$a^{10}p^{o}-z^{8}F$ †
4803.536	A	80	1.42	3.99	5½-4½	(101)
4716.576	A	30	1.37	3.98	4½-3½	$a^{10}p^{o}-y^{8}P$ †
*4639.001	A	200	1.31	3.97	3½-2½	(102)
4406.67	A	400	1.42	4.22	5½-5½	$a^{10}p^{o}-y^{10}p$ †
4431.24	A	200	1.31	4.10	3½-3½	(103)
*4522.82 §	A	250	1.42	4.15	5½-4½	
4514.505	A	300	1.37	4.10	4½-3½	
4325.566	A	300	1.37	4.22	4½-5½	
4347.310	A	400	1.31	4.15	3½-4½	
4003.850	A	30	1.42	4.50	5½-5½	$a^{10}p^{o}-y^{8}D$ †
3748.88	A	50	1.37	4.88	4½-3½	(104)
3489.281	A	40	1.31	4.85	3½-4½	$a^{10}p^{o}$-6 (105)
3414.307	A	60	1.42	5.03	5½-6½	$a^{10}p^{o}-x^{8}P$ (106)
3363.974	A	30	1.37	5.03	4½-5½	$a^{10}p^{o}-y^{8}F$ † (107)
8610.04	A	80	1.85	3.52	5½-5½	$a^{8}F^{o}-z^{10}p$ † (108)
6480.11	A	300	1.73	3.82	6½-6½	$a^{8}F^{o}-z^{10}F$ †
7172.26	A	600	1.73	3.44	6½-5½	(109)
7252.70	A	400	1.65	3.35	5½-4½	
7394.90	A	150	1.61	3.28	4½-3½	
7505.35	A	80	1.59	3.24	3½-2½	
5721.99	A	200	1.65	3.81	5½-4½	$a^{8}F^{o}-z^{8}P$ †
8704.18	A	60	1.81	3.46	4½-3½	(110)
6622.38	A	50	1.59	3.48	3½-3½	
6260.31	A	40	1.61	3.59	4½-4½	$a^{8}F^{o}-z^{10}D$
*6180.42 §	A	300	1.73	3.73	6½-5½	(111)
6380.95	A	600	1.65	3.59	5½-4½	
6080.65	A	300	1.73	3.75	6½-5½	$a^{8}F^{o}-z^{8}D$
6004.57	A	500	1.65	3.71	5½-4½	(112)
5904.07	A	800	1.61	3.70	4½-3½	
5855.24	A	300	1.59	3.70	3½-2½	
5845.71	A	80	1.58	3.69	2½-1½	
5884.59	A	30	1.65	3.75	5½-5½	
5897.62	A	200	1.61	3.71	4½-4½	
5840.47	A	200	1.59	3.70	3½-3½	
5815.85	A	250	1.58	3.70	2½-2½	
5830.99	A	300	1.57	3.69	1½-1½	
5801.30	A	40	1.58	3.70	2½-3½	
5807.05	A	100	1.58	3.69	½-1½	
*4881.925	A	200	1.57	4.10	1½-1½?	$a^{8}F^{o}-z^{6}P$ † (113)
5093.251	A	600	1.73	4.14	6½-6½	$a^{8}F^{o}-z^{8}F$ †
5108.91	A	500	1.85	4.07	5½-5½	(114)
5098.38	A	400	1.81	4.03	4½-4½	
5100.937	A	100	1.59	4.01	3½-3½	
5175.839	A	50	1.56	3.95	½- ½	
5256.030	A	50	1.73	4.07	8½-5½	
5178.104	A	100	1.65	4.03	5½-4½	
5187.237	A	250	1.58	3.96	2½-1½	
5186.915	A	200	1.57	3.95	1½- ½	
4954.025	A	50	1.65	4.14	5½-6½	
5031.290	A	250	1.81	4.07	4½-5½	
5050.878	A	300	1.59	4.03	3½-4½	
5071.023	A	200	1.58	4.01	2½-3½	
5111.930	A	30	1.57	3.98	1½-2½	
5156.76	A	200	1.56	3.96	½-1½	
5310.488	A	200	1.61	3.98	4½-3½	$a^{8}F^{o}-y^{8}P$ †
5191.081	A	250	1.59	3.97	3½-2½	(115)
5199.211	A	60	1.81	3.99	4½-4½	
5160.896	A	100	1.59	3.98	3½-3½	
5180.105	A	40	1.58	3.97	2½-2½	
5149.841	A	50	1.59	3.99	3½-4½	
5130.28	A	200	1.58	3.98	2½-3½	
5140.839	A	400	1.57	3.97	1½-2½	
4936.155	A	50	1.73	4.22	8½-5½	$a^{8}F^{o}-y^{10}p$ †
4808.165	A	40	1.65	4.22	5½-5½	(118)
4892.11	A	30	1.58	4.10	2½-3½	
4436.225	A	200	1.73	4.50	6½-5½	$a^{8}F^{o}-y^{8}D$ †
4296.30	A	400	1.85	4.52	5½-4½	(117)
4239.803	A	200	1.81	4.53	4½-3½	
4173.558	A	100	1.59	4.55	3½-2½	
4127.721	A	25	1.58	4.57	2½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
4241.276	A	80	1.61	4.52	4½-4½	$a^{8}F^{o}-y^{8}D$ †
4197.069	A	150	1.59	4.53	3½-3½	(117)
4153.510	A	125	1.58	4.55	2½-2½	cont
4115.376	A	80	1.57	4.57	1½-1½	
4141.017	A	25	1.57	4.55	1½-2½	
4108.401	A	50	1.56	4.57	½-1½	
4059.370	A	80	1.72	4.76	6½-5½	$a^{8}F^{o}-z^{6}F$ †
3722.068	A	100	1.72	5.03	6½-5½	(118) $a^{8}F^{o}-y^{8}F$ † (119)
7908.06	A	40d†	2.19	3.75	5½-5½	$c^{8}D^{o}-z^{8}D$ † (120)
6314.22	A	50	2.19	4.14	5½-6½	$c^{8}D^{o}-z^{8}F$ †
7197.08	A	80	2.27	3.98	1½-2½	(121)
6568.00	A	100	2.19	4.07	5½-5½	
6996.76	A	1500	2.22	3.98	2½-2½	
6857.13	A	600	2.19	3.99	5½-4½	$c^{8}D^{o}-y^{8}P$
6920.62	A	250	2.20	3.98	4½-3½	(122)
7000.75	A	200	2.21	3.97	3½-2½	
6900.73	A	200	2.20	3.99	4½-4½	
6945.98	A	150	2.21	3.98	3½-3½	
7051.00	A	200	2.22	3.97	2½-2½	
6299.07	A	40	2.19	4.15	5½-4½	$c^{8}D^{o}-y^{10}p$
6494.11	A	80	2.20	4.10	4½-3½	(123)
4968.575	A	50	2.19	4.67	5½-4½	$c^{8}D^{o}$-7 (124)
4916.78	A	25	2.19	4.70	5½-4½	$c^{8}D^{o}$-8 (125)
4799.859	A	60	2.19	4.76	5½-5½	$c^{8}D^{o}-z^{6}F$ †
4888.542	A	40	2.21	4.73	3½-3½	(126)
4839.616	A	40	2.22	4.77	2½-2½	
4933.578	A	60	2.19	4.69	5½-4½	
4875.986	A	50	2.20	4.73	4½-3½	
4884.272	A	30	2.20	4.85	4½-4½	$c^{8}D^{o}-x^{8}P$ † (127)
*4337.510§	A	80	2.19	5.03	5½-6½	$c^{8}D^{o}-y^{8}F$ †
4335.290	A	25	2.19	5.03	5½-5½	(128)
4304.087	A	25	2.21	5.07	3½-3½	
4292.747	A	25	2.22	5.09	2½-2½	
3191.044	A	125	2.19	6.08	5½-4½	$c^{8}D^{o}-w^{8}P$ †
3173.169	A	30	2.20	6.09	4½-3½	(129)
3200.454	A	60	2.20	6.06	4½-4½	
3177.490	A	30	2.21	6.09	3½-3½	
3206.466	A	400	2.27	6.12	1½-2½	
6752.87	A	2000	2.32	4.14	7½-6½	$a^{8}G^{o}-z^{8}F$ †
7006.16	A	1000	2.31	4.07	6½-5½	(130)
7118.86	A	800	2.30	4.03	5½-4½	
7054.62	A	200	2.26	4.01	4½-3½	
7085.52	A	50	2.24	3.98	3½-2½	
7164.90	A	25	2.23	3.96	2½-1½	
8718.14	A	150	2.31	4.14	8½-8½	
6988.75	A	100	2.30	4.07	5½-5½	
6959.34	A	150	2.26	4.03	4½-4½	
6971.68	A	100	2.24	4.01	3½-3½	
7058.02	A	80	2.23	3.98	2½-2½	
7116.77	A	150	2.22	3.96	1½-1½	
7146.13	A	40	2.22	3.95	½- ½	
8702.12	A	40	2.30	4.14	5½-6½	
7141.17	A	25	2.24	3.97	3½-2½	$a^{8}G^{o}-y^{8}P$ † (131)
5631.43	A	100	2.31	4.50	6½-5½	$a^{8}G^{o}-y^{8}D$ †
5510.58	A	80	2.26	4.50	4½-5½	(132)
4998.373	A	200	2.26	4.73	4½-3½	$a^{6}G^{o}-z^{6}F$ †
*4881.925	A	200	2.24	4.77	3½-2½	(133)
4821.955	A	60	2.23	4.79	2½-1½	
4800.100	A	60	2.22	4.79	1½-1½	
4772.728	A	30	2.22	4.81	½- ½	
4755.347	A	30	2.22	4.82	1½-2½	$a^{8}G^{o}-x^{8}P$ † (134)
4540.016	A	200	2.32	5.03	7½-6½	$a^{8}G^{o}-y^{8}F$ †
4531.94	A	150	2.31	5.03	8½-5½	(135)
4486.352	A	100	2.30	5.05	5½-4½	
4517.10	A	30	2.30	5.03	5½-6½	
3287.192	A	40	2.30	8.08	5½-4½	$a^{8}G^{o}-w^{8}P$ †
3252.743	A	30	2.26	6.06	4½-4½	(136)
7017.73	A	80	2.25	4.01	2½-3½	$1^{o}-z^{8}F$
7133.18	A	100	2.25	3.98	2½-2½	(137)
7242.24	A	80	2.25	3.98	2½-1½	
7189.57	A	800	2.25	3.97	3½-3½	$1^{o}-y^{8}P$ (138)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Gd II continued						
7385.97	A	80	2.34	4.01	2½-3½	$2^{o}-z^{8}F$ (139)
5162.47	A	50d	2.34	4.73	2½-3½	$2^{o}-z^{6}F$ † (140)
4223.020	A	60	2.34	5.26	2½-3½	$2^{o}-y^{6}P$ (141)
7748.37	A	40	2.40	3.99	4½-4½	$3^{o}-y^{8}p$ † (142)
4965.047	A	60	2.40	4.88	4½-4½	$3^{o}-z^{6}D$ (143)
4608.030	A	40	2.40	5.07	4½-3½	$3^{o}-y^{8}F$ † (144)
8089.96	A	60	2.46	3.99	3½-4½	$4^{o}-y^{8}P$ † (145)
5441.17	A	40	2.46	4.73	3½-3½	$4^{o}-z^{6}F$ (146)
*5178.843§	A	100	2.46	4.85	3½-4½	$4^{o}-x^{8}P$
5200.549	A	30	2.46	4.84	3½-3½	(147)
4726.725	A	40	2.46	5.07	3½-3½	$4^{o}-y^{8}F$ † (148)
*3402.072	A	1000	2.46	6.09	3½-3½	$4^{o}-w^{8}P$ † (149)

Strongest Unclassified Lines of **Gd II**

8442.58	A	300	V
8316.38	A	500	V
7963.25	A	500	V
7930.25	A	2000	V
7846.35	A	3000	V
*7844.87 §	A	300	V
7324.89	A	400	V
7147.31	A	500	V
7135.73	A	250	V
7037.26	A	600	V
6985.89	A	1500	V
*6980.86 §	A	250	V
6887.63	A	300	V
5913.55	A	800	V
*5911.45 §	A	500	V
*5754.17 §	A	250	V
5538.32	A	300	V
4397.51	A	300	IV
4304.895	A	400	V
4297.173	A	400	V
4253.612	A	800	V
4238.782	A	500	V
4197.681	A	800	V
4137.104	A	500	V
4111.438	A	500	V
4063.390	A	1500	IV
4062.590	A	500	V
4053.294	A	1000	V
4049.858	A	2000	IV
4022.333	A	300	V
4013.798	A	250	V
4008.913	A	400	V
3996.320	A	800	IV
3895.791	A	400	V
3842.20	A	400	IV
3801.29	A	400	V
3782.34	A	300	V
3770.69	A	300	V
3733.08	A	300	V
3719.45	A	800	V
3664.60	A	2000	IV
*3457.047§	A	300	V
3364.241	A	500	V
3330.340	A	800	V
3325.460	A	600	V
3084.007	A	250	V
3005.092	A	300	V
3002.860	A	1000	V
2963.605	A	400	V

Tb I No analysis May 1942 (Temperature Class)

Tb II No analysis May 1942 (Temperature Class)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Dy I No analysis May 1942 (Temperature Class)						
Dy II No analysis May 1942 (Temperature Class)						
Ho I No analysis May 1942 (Temperature Class)						
Ho II No analysis May 1942 (Temperature Class)						
Er Not separated May 1942						

Tm I I P ? Anal D List D Jan 1943

4386.434	A	200	0.00	2.81	3½-	$a^3F°$-2
4359.929	A	300	0.00	2.83	3½-	(1) 3
3887.347	A	200	0.00	3.17	3½-	5
3949.275	A	100	1.08	4.21	2½-	$a^3F°$-15
3916.476	A	200	1.08	4.23	2½-	(2) 16

Strongest Unclassified Lines of Tm I

5971.28	A	200	I
5895.646	A	300	I
5764.300	A	200	I
5675.853	A	400	I
5631.404	A	150	I
5307.121	A	200	I
4203.730	A	300	I
4187.616	A	500	I
4105.843	A	600	I
4094.188	A	700	I
3883.132	A	400	I
3751.812	A	100	I
3744.066	A	300	I
3717.915	A	500	I

Tm II I P ? Anal B List B Jan 1942

4526.565	A	80	0.00	2.67	4-	$a^3F°$-1
4481.273	A	200	0.00	2.75	4-	(1) 2
4199.918	A	100	0.00	2.94	4-4	3
3958.101	A	200	0.00	3.12	4-4?	4
3890.528	A	60	0.00	3.17	4-	5
3848.023	A	1000	0.00	3.21	4-	$a^3F°$-6
3761.913	A	600	0.00	3.28	4-4	(2) 7
3761.331	A	800	0.00	3.28	4-3	8
3701.364	A	250	0.00	3.33	4-4	9
3668.088	A	120	0.00	3.36	4-4	10
3608.766	A	200	0.00	3.42	4-3	$a^3F°$-11
3536.576	A	80	0.00	3.49	4-3	(3) 12
3425.630	A	150	0.00	3.60	4-4	13
3397.499	A	100	0.00	3.63	4-3	14
3291.001	A	120	0.00	3.75	4-4	15
3276.811	A	50	0.00	3.77	4-4	$a^3F°$-16
3258.048	A	150	0.00	3.79	4-3	(4) 17
3241.530	A	200	0.00	3.81	4-4	18
3210.825	A	50	0.00	3.84	4-4	20
3133.886	A	250	0.00	3.94	4-4	22
4677.858	A	40	0.03	2.67	3-	$a^3F°$-1
4529.376	A	80	0.03	2.75	3-	(5) 2
4242.153	A	300	0.03	2.94	3-4	3
3995.586	A	80	0.03	3.12	3-4?	4
3883.437	A	200	0.03	3.21	3-	6
3795.759	A	600	0.03	3.28	3-4	$a^3F°$-7
3795.169	A	80	0.03	3.28	3-3	(6) 8
3734.124	A	300	0.03	3.33	3-4	9
3700.256	A	300	0.03	3.36	3-4	10
3566.472	A	100	0.03	3.49	3-3	12
3453.665	A	200	0.03	3.60	3-4	$a^3F°$-13
3425.082	A	300	0.03	3.63	3-3	(7) 14
3316.875	A	60	0.03	3.75	3-4	15
3302.454	A	150	0.03	3.77	3-4	16
3283.400	A	50	0.03	3.79	3-3	17
3266.633	A	80	0.03	3.81	3-4	$a^3F°$-18
3235.448	A	90	0.03	3.84	3-4	(8) 20
3172.828	A	200	0.03	3.92	3-3	21
3157.344	A	180	0.03	3.94	3-4	22
3098.597	A	100	0.03	4.01	3-3?	24
3015.296	A	100	0.03	4.12	3-4	27
3900.790	A	90	1.08	4.35	2-2?	$a^3F°$-33
3810.724	A	50	1.08	4.32	2-2	(9) 37
3756.860	A	100	1.08	4.37	2-	40
3704.848	A	50	1.08	4.41	2-3	41
3665.812	A	60	1.08	4.45	2-3	$a^3F°$-44
3653.614	A	80	1.08	4.46	2-3	(10) 45
3557.796	A	80	1.08	4.55	2-3	47
3481.750	A	30	1.08	4.63	2-3	48
3285.609	A	60	1.08	4.84	2-2	56
3929.583	A	100	1.11	4.25	3-3?	$a^1F°$-33
3838.198	A	200	1.11	4.32	3-2	(11) 37
3798.752	A	80	1.11	4.35	3-3	39
3783.561	A	60	1.11	4.37	3-	40
3730.810	A	40	1.11	4.41	3-3	41

Tm II continued

3678.862	A	80	1.11	4.46	3-3	$a^1F°$-45
3431.195	A	100	1.11	4.70	3-4	(12) 52
3399.951	A	70	1.11	4.74	3-4?	53
3374.513	A	100	1.11	4.76	3-2	54
3327.578	A	40	1.11	4.81	3-	55
3267.401	A	80	1.11	4.88	3-3	$a^1F°$-57
3236.806	A	150	1.11	4.93	3-4	(13) 58
3231.509	A	60	1.11	4.92	3-3	59

Strongest Unclassified Lines of Tm II

5783.356	B	100	V
5709.976	B	100	IV
4686.565	B	80	IV
3996.518	B	200	III
3817.395	B	100	III
3725.061	B	200	III
3535.522	B	100	III
3463.198	B	300	III
3441.505	B	200	III
3362.619	B	300	III
3309.804	B	100	IV
3240.230	B	125	IV
3151.036	B	200	IV
3131.257	B	400	IV

Yb I I P 6.23 Anal B List D May 1942

5556.48	A	1500	0.00	2.22	0-1	6^1S-$6^3P°$ (1)
3987.98//	A	2000	0.00	3.09	0-1	6^1S-$6^1P°$ (2)
7699.49	A	1500	2.43	4.04	2-1	$6^3P°$-7^3S
6799.61	A	1000	2.22	4.04	1-1	(3)
6489.10	A	800	2.13	4.04	0-1	

Yb II I P 12.05 Anal D List D May 1942

3289.36	A	800	0.00	3.75	½-1½	6^2S-$6^2P°$
3694.19//	A	1000	0.00	3.34	½- ½	(1)

Lu I I P 5? Anal B List D May 1942

6004.53	A	100	0.25	2.30	2½-3½	a^2D- $^2F°$? †
5736.55	A	40	0.00	2.15	1½-2½	(1)
5135.10	A	100	0.25	2.65	2½-2½	a^2D- $^2D°$? †
5402.57	A	50	0.00	2.28	1½-1½	(2)
4658.03	A	50	0.00	2.65	1½-2½	
3841.17	A	100	0.25	3.46	2½-1½	a^2D- $^2P°$?
4134.73	A	100	0.00	2.99	1½- ½	(3)
3567.84	A	80	0.00	3.46	1½-1½	

Strongest Unclassified Lines of Lu I

5001.15	A	100	III
4518.58	A	200	II
3647.77	A	50	III

Lu II I P ? Anal A List B May 1942

3507.39	A	100	0.00	3.52	0-1	a^1S-$z^3P°$ (1)
5476.69	A	200	1.75	4.01	3-2	a^3D-$z^3P°$
6221.88	A	200	1.54	3.52	2-1	(2)
6463.11	A	200	1.46	3.37	1-0	
4994.14	A	120	1.54	4.01	2-2	
5983.90	A	100d	1.46	3.52	1-1	
4839.62	A	30d	1.46	4.01	1-2	
3876.65	A	100	1.54	4.72	2-1	a^3D-$z^1P°$ (3)
3077.59	A	150	1.54	5.55	2-3	a^3D-$z^3F°$ †
3397.07	A	150	1.46	5.09	1-2	(4)
3254.32	A	90	1.75	5.55	3-3	
3472.48	A	120	1.54	5.09	2-2	
4785.42	A	60	2.14	4.72	2-1	a^1D-$z^1P°$ (5)
3623.98	A	40	2.14	5.55	2-3	a^1D-$z^3F°$
4184.26	A	120	2.14	5.09	2-2	(6)
3554.43	A	200	2.14	5.61	2-2	a^1D-$z^1D°$ (7)

Hf I I P ? Anal D List D Dec 1942

5550.60	A	50	0.00	2.22	2-2	a^3F- $2°$
5181.86	A	40	0.00	2.38	2-3	(1) $5°$
3777.64	A	50	0.00	3.27	2-1	$17°$
3682.25	A	200	0.00	3.35	2-2	$18°$
3497.49	A	150	0.00	3.53	2-3	$24°$
3472.38	A	100	0.00	3.55	2-1	$25°$

Hf I continued

3332.73	A	200	0.00	3.70	2-3	a^3F-$29°$
3162.57	A	80	0.00	3.90	2-2	(2) $32°$
3072.88	A	300	0.00	4.02	2-2	$34°$
3018.32	A	80	0.00	4.09	2-2	$35°$
2980.82	A	100	0.00	4.14	2-2	$37°$
4174.33	A	50	0.29	3.25	3-3	a^3F-$16°$
3523.02	A	60	0.29	3.79	3-4	(3) $30°$
3312.87	A	100	0.29	4.02	3-2	$34°$
3131.81	A	150	0.29	4.23	3-2	$41°$
3080.84	A	80	0.29	4.30	3-4	a^3F-$43°$
3067.41	A	80	0.29	4.31	3-3	(4) $45°$
3020.54	A	100	0.29	4.38	3-3	$46°$
2964.88	A	150	0.29	4.45	3-4	$47°$
3820.74	A	50	0.56	3.79	4-4	a^3F-$30°$
3172.94	A	100	0.56	4.45	4-4	(5) $47°$
3156.68	A	50	0.56	4.47	4-3	$48°$
5719.18	A	40	1.11	3.27	2-1	a^3P-$17°$ (6)
5552.12	A	40	0.70	2.92	2-3	a^1D-$11°$ (7)

Hf II I P 14.8 Anal B List B Nov 1942

3253.70	A	80	0.38	4.17	2½-3½	a^2D-$z^4F°$
3399.80	A	150	0.00	3.63	1½-2½	(1)
3793.37	A	60	0.38	3.63	2½-2½	
3561.65	A	80	0.00	3.47	1½-1½	
3193.53	A	40	0.38	4.34	2½-2½	a^2D-$z^4D°$ †
3145.32	A	25	0.00	3.93	1½-1½	(2)
3479.29	A	40	0.38	3.93	2½-1½	
3428.37	A	20	0.00	3.60	1½- ½	
3000.09	A	40	0.38	4.49	2½-1½	a^2D-$z^2P°$ †
3016.94	A	6	0.00	4.09	1½- ½	(3)
3317.99	A	20	0.38	4.10	2½-2½	a^2D-$z^2D°$ †
3217.30	A	25	0.38	4.31	2½-1½	(4)
3013.90	A	100	0.00	4.10	1½-2½	
3134.72	A	150	0.38	4.31	2½-2½	a^2D-$z^4G°$ † (5)
3352.06	A	80	1.03	4.71	4½-4½	a^4F-$z^4F°$
3644.35	A	60	0.78	4.17	3½-3½	(6)
4080.44	A	60	0.61	3.63	2½-2½	
4093.16	A	150	0.45	3.47	1½-1½	
3933.65	A	40	1.03	4.17	4½-3½	
4335.15	A	5	0.78	3.63	3½-2½	
3139.67	A	15	0.78	4.71	3½-4½	
3463.65	A	15	0.61	4.17	2½-3½	
3880.82	A	40	0.45	3.63	1½-2½	
3505.22	A	150	1.03	4.55	4½-3½	a^4F-$z^4D°$
3569.03	A	80	0.78	4.34	3½-2½	(7)
3719.27	A	70	0.61	3.93	2½-1½	
3918.10	A	100	0.45	3.60	1½- ½	
3273.66	A	6	0.78	4.55	3½-3½	
3394.58	A	25	0.61	4.24	2½-2½	
3552.70	A	40	0.45	3.93	1½-1½	
3126.27	A	6	0.61	4.55	2½-3½	
3255.28	A	25	0.45	4.24	1½-2½	
3176.85	A	50	0.61	4.49	2½-1½	a^4F-$z^2P°$
3389.83	A	70	0.45	4.09	1½- ½	(8)
3054.52	A	15	0.45	4.49	1½-1½	
3535.54	A	80	0.61	4.10	2½-2½	a^4F-$z^2D°$ †
3279.98	A	20	0.45	4.31	1½-1½	(9)
3384.70	A	20	0.45	4.10	1½-2½	
2975.89	A	150	0.61	4.75	2½-3½	a^4F-$z^4G°$ †
3194.19	A	100	0.45	4.31	1½-2½	(10)
3109.11	A	150	0.78	4.75	3½-3½	
3328.21	A	20	0.61	4.31	2½-2½	
3495.75	A	20	0.78	4.31	3½-2½	
3031.16	A	120	0.61	4.68	2½-1½	a^4F-$y^2D°$ † (11)
3025.29	A	20	1.03	5.11	4½-3½	a^4F-$z^2F°$ †
3101.39	A	100	0.78	4.76	3½-2½	(12)
2968.82	A	120	0.61	4.76	2½-2½	
4926.99	A	8	1.66	4.17	2½-3½	a^4P-$z^4F°$ †
6279.84	A	20	1.66	3.63	2½-2½	(13)
6835.29	A	50	1.66	3.47	2½-1½	
4272.85	A	60	1.66	4.55	2½-3½	a^4P-$z^4D°$ †
4664.14	A	150	1.60	4.34	1½-2½	(14)
5040.82	A	150	1.48	3.93	½-1½	
5299.85	A	10	1.60	3.93	1½-1½	
5809.50	A	30	1.48	3.60	½- ½	
5463.38	A	10	1.66	3.93	2½-1½	
4367.90	A	40	1.66	4.49	2½-1½	a^4P-$z^2P°$
4945.38	A	10	1.60	4.09	1½- ½	(15)
4262.72	A	10	1.60	4.49	1½-1½	
4719.10	A	30	1.48	4.09	½- ½	
5075.92	A	20	1.66	4.10	2½-2½	a^4P-$z^2D°$ †
4844.00	A	15	1.66	4.31	2½-1½	(16)
4934.46	A	60	1.60	4.10	1½-2½	
4097.21	A	8	1.66	4.68	2½-1½	a^4P-$y^2D°$ (17)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Hf II continued						
3699.72	A	25	1.66	5.00	2½-2½	$a^4P-z^4P^o$
3800.39	A	5	1.60	4.84	1½-1½	(18)
3780.09	A	7	1.48	4.74	½- ½	
3883.77	A	20	1.66	4.84	2½-1½	
3923.91	A	40	1.60	4.74	1½- ½	
3624.00	A	10	1.60	5.00	1½-2½	
3665.35	A	20	1.48	4.84	½-1½	
3984.03	A	8	1.66	4.76	2½-3½	$a^4P-z^2F^o$ † (19)
3413.74	A	8	1.66	5.28	2½-1½	$a^4P-y^2P^o$ †
3349.17	A	5	1.60	5.28	1½-1½	(20)
3203.67	A	10	1.66	5.52	2½-3½	$a^4P-y^2F^o$ † (21)
4605.79	A	30	1.49	4.17	2½-3½	$a^2F-z^4F^o$ †
5348.40	A	15	1.86	4.17	3½-3½	(22)
5767.18	A	30	1.49	3.63	2½-2½	
6980.91	A	200	1.86	3.63	3½-2½	
6248.95	A	100	1.49	3.47	2½-1½	
4586.25	A	10	1.86	4.55	3½-3½	$a^2F-z^4D^o$
4486.14	A	30	1.49	4.34	2½-2½	(23)
5187.75	A	30	1.86	4.34	3½-2½	
5071.23	A	8	1.49	3.92	2½-1½	
4029.16	A	10	1.49	4.55	2½-3½	
4113.58	A	20	1.49	4.49	2½-1½	$a^2F-z^2P^o$ (24)
5524.35	A	50	1.86	4.10	3½-2½	$a^2F-z^2D^o$
4533.18	A	40	1.49	4.21	2½-1½	(25)
4735.67	A	20	1.49	4.10	2½-2½	
3661.05	A	12	1.86	5.23	3½-4½	$a^2F-z^4G^o$
3782.78	A	8	1.49	4.75	2½-3½	(26)
4269.67	A	20	1.86	4.75	3½-3½	
4370.95	A	100	1.49	4.31	2½-2½	
5034.33	A	8	1.86	4.31	3½-2½	
3747.48	A	7	1.86	5.16	3½-2½	$a^2F-y^2D^o$ †
3872.55	A	20	1.49	4.68	2½-1½	(27)
3932.40	A	10	1.86	5.00	3½-2½	$a^2F-z^4P^o$ † (28)
3797.95	A	10	1.86	5.11	3½-3½	$a^2F-z^2F^o$
3771.36	A	8	1.49	4.76	2½-2½	(29)
3407.76	A	15	1.49	5.11	2½-3½	
3220.66	A	50	1.86	5.69	3½-4½	$a^2F-y^4F^o$
3092.26	A	20	1.49	5.48	2½-3½	(30)
3410.18	A	40	1.86	5.48	3½-3½	
3162.61	A	40	1.49	5.39	2½-2½	
3495.94	A	10	1.86	5.39	3½-2½	
3283.39	A	6	1.49	5.25	2½-1½	
3376.68	A	4	1.86	5.52	3½-3½	$a^2F-y^2F^o$ †
3140.77	A	15	1.49	5.42	2½-2½	(31)
3084.68	A	20	1.49	5.52	2½-3½	
3046.03	A	20	1.86	5.91	3½-2½	$a^2F-y^4D^o$ † (32)
3116.95	A	8	1.86	5.82	3½-3½	$a^2F-z^2G^o$ † (33)
6644.60	A	200	1.77	3.63	1½-2½	$b^2D-z^4F^o$ † (34)
4999.69	A	40	1.77	4.24	1½-2½	$b^2D-z^4D^o$ †
6935.16	A	50	2.14	3.92	2½-1½	(35)
6754.61	A	100	1.77	3.60	1½- ½	
5260.44	A	40	2.14	4.49	2½-1½	$b^2D-z^2P^o$
5324.26	A	30	1.77	4.09	1½- ½	(36)
4541.31	A	20	1.77	4.49	1½-1½	
5058.18	A	10	1.77	4.31	1½-1½	$b^2D-z^2D^o$
5311.60	A	150	1.77	4.10	1½-2½	(37)
4731.36	A	40	2.14	4.75	2½-3½	$b^2D-z^4G^o$ (38)
4249.33	A	30	1.77	4.68	1½-1½	$b^2D-y^2D^o$
3648.35	A	6	1.77	5.16	1½-2½	(39)
4320.69	A	40	2.14	5.00	2½-2½	$b^2D-z^4P^o$
4020.25	A	5	1.77	4.84	1½-1½	(40)
4573.81	A	20	2.14	4.84	2½-1½	
4158.90	A	30	2.14	5.11	2½-3½	$b^2D-z^2F^o$ †
4127.80	A	40	1.77	4.76	1½-2½	(41)
3698.39	A	10	2.14	5.48	2½-3½	$b^2D-y^4F^o$ † (42)
3935.64	A	20	2.14	5.28	2½-1½	$b^2D-y^2P^o$
3485.16	A	3	1.77	5.31	1½- ½	(43)
3518.75	A	15	1.77	5.28	1½-1½	
3659.02	A	4	2.14	5.52	2½-3½	$b^2D-y^2F^o$
3384.14	A	10	1.77	5.42	1½-2½	(44)
3195.63	A	8	1.77	5.63	1½- ½	$b^2D-y^4D^o$ † (45)
3110.87	A	40	1.77	5.74	1½- ½	$b^2D-z^2S^o$ (46)
3024.78	A	15	2.14	6.22	2½-1½	$b^2D-y^4P^o$ † (47)
5391.36	A	10	2.20	4.49	1½-1½	$a^2P-z^2P^o$ †
5590.73	A	5	1.88	4.09	½- ½	(48)
6531.66	A	30	2.20	4.09	1½- ½	
6512.61	A	10	2.20	4.10	1½-2½	$a^2P-z^2D^o$ †
5298.06	A	100	1.88	4.31	½-1½	(49)
5842.23	A	80	2.20	4.31	1½-2½	$a^2P-z^4G^o$ (50)
4177.50	A	20	2.20	5.16	1½-2½	$a^2P-y^2D^o$ †
4417.37	A	100	1.88	4.68	½-1½	(51)
4319.51	A	8	1.88	4.74	½- ½	$a^2P-z^4P^o$ † (52)
3867.32	A	15	2.20	5.39	1½-2½	$a^2P-y^4F^o$ †
4049.44	A	10	2.20	5.25	1½-1½	(53)
4008.46	A	8	2.20	5.28	1½-1½	$a^2P-y^2P^o$ †
3597.42	A	10	1.88	5.31	½- ½	(54)
3964.96	A	15	2.20	5.31	1½- ½	
3487.57	A	8	2.20	5.74	1½- ½	$a^2P-z^2S^o$
3199.99	A	30	1.88	5.74	½- ½	(55)
3206.77	A	4	2.20	6.05	1½-2½	$a^2P-x^2D^o$
3055.43	A	9	1.88	5.92	½-1½	(56)
4807.14	A	20	2.15	4.71	4½-4½,	$a^2G-z^4F^o$
6223.81	A	10	2.19	4.17	3½-3½	(57)
5128.53	A	20	2.15	4.55	4½-3½	$a^2G-z^4D^o$ † (58)
4050.67	A	7	2.19	5.23	3½-4½	$a^2G-z^4G^o$ †
3998.51	A	6d	2.15	5.23	4½-4½	(59)
4809.18	A	6	2.19	4.75	3½-3½	
4735.75	A	10	2.15	4.75	4½-3½	
5801.71	A	15	2.19	4.31	3½-2½	
4162.40	A	50	2.15	5.11	4½-3½	$a^2G-z^2F^o$ †
4790.72	A	40	2.19	4.76	3½-2½	(60)
3478.98	A	30	2.15	5.69	4½-4½	$a^2G-y^4F^o$ †
3701.15	A	40	2.15	5.48	4½-3½	(61)
3849.52	A	25	2.19	5.39	3½-2½	
3661.73	A	2	2.15	5.52	4½-3½	$a^2G-y^2F^o$
3817.20	A	20	2.19	5.42	3½-2½	(62)
3705.40	A	15	2.19	5.52	3½-3½	
3080.64	A	100	2.15	6.15	4½-4½	$a^2G-z^2G^o$ †
3394.99	A	30	2.19	5.82	3½-3½	(63)
3358.30	A	8	2.15	5.82	4½-3½	
3011.34	A	20	2.19	6.28	3½-2½	$a^2G-x^2F^o$ † (64)
6647.06	A	100	2.86	4.71	4½-4½	$b^4F-z^4F^o$
8236.13	A	10	2.67	4.17	3½-3½	(65)
6041.44	A	6	2.67	4.71	3½-4½	
7328.64	A	30	2.49	4.17	2½-3½	
7277.67	A	50	2.86	4.55	4½-3½	$b^4F-z^4D^o$ †
7861.22	A	8	2.67	4.24	3½-2½	(66)
8581.88	A	5?	2.49	3.92	2½-1½	
9742.38	A	?	2.33	3.60	1½- ½	
6557.91	A	100	2.67	4.55	3½-3½	
7030.33	A	150	2.49	4.24	2½-2½	
7757.89	A	15	2.33	3.92	1½-1½	
5969.38	A	5	2.49	4.55	2½-3½	
*6156.25	A	3d	2.49	4.49	2½-1½	$b^4F-z^2P^o$
7021.23	A	30	2.33	4.09	1½- ½	(67)
7663.09	A	30	2.49	4.10	2½-2½	$b^4F-z^2D^o$ † (68)
4334.65	A	30	2.86	5.70	4½-5½	$b^4F-z^4G^o$
4817.22	A	80	2.67	5.23	3½-4½	(69)
5444.07	A	30	2.49	4.75	2½-3½	
6330.84	A	20	2.33	4.31	1½-2½	
5194.57	A	6	2.86	5.23	4½-4½	
5929.35	A	5	2.67	4.75	3½-3½	
6511.62	A	6	2.86	4.75	4½-3½	
4622.71	A	100	2.49	5.16	2½-2½	$b^4F-y^2D^o$
5264.95	A	80	2.33	4.68	1½-1½	(70)
5057.03	A	30	2.67	5.11	3½-3½	$b^4F-z^2F^o$ †
4699.72	A	40	2.49	5.11	2½-3½	(71)
5079.65	A	60	2.33	4.76	1½-2½	
4350.52	A	150	2.86	5.69	4½-4½	$b^4F-y^4F^o$ †
4245.84	A	20	2.49	5.39	2½-2½	(72)
4232.43	A	60	2.33	5.25	1½-1½	
4703.62	A	10	2.86	5.48	4½-3½	
4535.38	A	30	2.67	5.39	3½-2½	
4466.41	A	30	2.49	5.25	2½-1½	
4187.68	A	8	2.33	5.28	1½-1½	$b^4F-y^2P^o$ † (73)
4640.14	A	20	2.86	5.52	4½-3½	$b^4F-y^2F^o$
4490.60	A	20	2.67	5.42	3½-2½	(74)
4336.66	A	200	2.67	5.52	3½-3½	
4206.59	A	80	2.49	5.42	2½-2½	
4071.22	A	6	2.49	5.52	2½-3½	
3877.11	A	40	2.86	6.04	4½-3½	$b^4F-y^4D^o$ †
3806.07	A	40	2.67	5.91	3½-2½	(75)
3766.92	A	50	2.49	5.76	2½-1½	
3737.88	A	15	2.33	5.63	1½- ½	
3744.98	A	15	2.86	6.15	4½-4½	$b^4F-z^2G^o$ †
3917.47	A	20	2.67	5.82	3½-3½	(76)
3438.24	A	15	2.33	5.92	1½-1½	$b^4F-x^2D^o$ † (77)
3218.20	A	8	2.67	6.51	3½-2½	$b^4F-w^2D^o$ † (78)
3323.35	A	20	2.86	6.57	4½-3½	$b^4F-w^2F^o$ (79)
7561.08	A	10	3.37	5.00	1½-2½	$b^4P-z^4P^o$ (80)
6308.17	A	5	3.52	5.48	2½-3½	$b^4P-y^4F^o$ †
6563.86	A	10	3.37	5.25	1½-1½	(81)
6455.85	A	20	3.37	5.28	1½-1½	$b^4P-y^2P^o$ † (82)
4904.51	A	30	3.52	6.04	2½-3½	$b^4P-y^4D^o$ †
4848.46	A	20	3.37	5.91	1½-2½	(83)
5080.44	A	10	3.33	5.76	½-1½	
5164.56	A	8	3.52	5.91	2½-2½	
5156.06	A	5	3.37	5.76	1½-1½	
4765.78	A	12	3.33	5.92	½-1½	$b^4P-x^2D^o$ (84)
4760.59	A	20	3.33	5.93	½-1½	$b^4P-z^4S^o$ (85)
4570.70	A	30	3.52	6.22	2½-1½	$b^4P-y^4P^o$
4321.36	A	30	3.37	6.22	1½-1½	(86)
4268.10	A	5	3.33	6.22	½-1½	
4426.18	A	9	3.52	6.31	2½-1½	$b^4P-w^2D^o$ †
4141.84	A	5	3.33	6.31	½-1½	(87)
4007.36	A	10	3.52	6.60	2½-1½	$b^4P-x^4P^o$ † (88)
6997.83	A	20	3.47	5.23	4½-4½	$b^2G-z^4G^o$ (89)
6135.10	A	20	3.47	5.48	4½-3½	$b^2G-y^4F^o$ †
6567.39	A	60	3.51	5.39	3½-2½	(90)
6027.57	A	20	3.47	5.52	4½-3½	$b^2G-y^2F^o$ †
6473.89	A	20	3.51	5.42	3½-2½	(91)
4599.46	A	40	3.47	6.15	4½-4½	$b^2G-z^2G^o$
5346.30	A	40	3.51	5.82	3½-3½	(92)
5247.10	A	60	3.47	5.82	4½-3½	
4675.45	A	10	3.51	6.15	3½-4½	
4865.43	A	10	3.51	6.05	3½-2½	$b^2G-x^2D^o$ (93)
4125.10	A	5	3.47	6.46	4½-3½	$b^2G-x^2F^o$
4452.70	A	10	3.51	6.28	3½-2½	(94)
4123.54	A	10	3.51	6.51	3½-2½	$b^2G-w^2D^o$ (95)
3810.59	A	10	3.51	6.75	3½-2½	$b^2G-x^4D^o$ † (96)
3979.40	A	40	3.47	6.57	4½-3½	$b^2G-w^2F^o$ (97)
3864.75	A	20	3.47	6.66	4½-3½	$b^2G-y^2G^o$ † (98)
6584.53	A	40	3.82	5.69	5½-4½	$a^2H-y^4F^o$
7983.66	A	5	3.94	5.48	4½-3½	(99)
7016.99	A	6	3.94	5.69	4½-4½	
5289.98	A	10	3.82	6.15	5½-4½	$a^2H-z^2G^o$
6542.80	A	50	3.94	5.82	4½-3½	(100)
5565.56	A	5	3.94	6.15	4½-4½	
3762.51	A	25	3.94	7.22	4½-3½	$a^2H-x^4D^o$ (101)
4682.68	A	8	3.94	6.57	4½-3½	$a^2H-w^2F^o$ (102)
3900.64	A	20	3.82	6.98	5½-5½	$a^2H-z^2H^o$ †
4613.74	A	50	3.94	6.61	4½-4½	(103)
4422.76	A	150	3.82	6.61	5½-4½	
4047.96	A	50	3.82	6.87	5½-4½	$a^2H-y^2G^o$ †
4524.74	A	30	3.94	6.66	4½-3½	(104)
6609.20	A	8	4.05	5.91	2½-2½	$c^2D-y^4D^o$ (105)
5110.61	A	7	4.05	6.46	2½-3½	$c^2D-x^2F^o$ (106)
4486.65	A	20	4.05	6.80	2½-2½	$c^2D-x^4P^o$ (107)
4241.93	A	7	4.05	6.96	2½-1½	$c^2D-w^2P^o$ (108)
3945.36	A	10n	4.05	7.17	2½-2½	$c^2D-v^2D^o$ (109)
6719.40	A	50	4.62	6.46	3½-3½	$b^2F-x^2F^o$
7398.96	A	10	4.62	6.28	2½-2½	(110)
6550.01	A	10	4.62	6.51	3½-2½	$b^2F-w^2D^o$
7278.72	A	6	4.62	6.31	2½-1½	(111)
5673.58	A	10	4.62	6.80	3½-2½	$b^2F-x^4P^o$ † (112)
5493.22	A	6	4.62	6.87	3½-4½	$b^2F-y^2G^o$ † (113)
4179.55	A	10	4.62	7.57	2½-1½	$b^2F-u^2D^o$ (114)
3946.00	A	7n	4.62	7.75	3½-2½	$b^2F-v^2F^o$ † (115)

Strongest Unclassified Lines of Hf II

7061.90	A	30?
6850.07	A	60?
6548.72	A	10
4519.02	A	10n
4443.07	A	20

Ta I I P ? Anal C List D Dec 1942

5402.51	A	40w	0.00	2.28	1½- ½	a^4F-1^o
5212.75	A	35w	0.00	2.37	1½-2½	(1) 2°
4574.32	A	15	0.00	2.70	1½-1½	8°
3970.10	A	15	0.00	3.11	1½-2½	17°
3077.24	A	15d?	0.00	4.01	1½-2½	52°
5328.38	A	20w	0.25	2.56	2½-1½	a^4F-4^o
5037.65	A	30	0.25	2.70	2½-1½	(2) 8°
2965.54	A	20r	0.25	4.41	2½-1½	62°

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ta I continued						
5811.10	A	20d?	0.49	2.61	3½-2½	a^4F-6° (3)
5461.31	A	25	0.69	2.95	4½-3½	a^4F-12°
3063.56	A	18r	0.69	4.72	4½-3½	(4)78°
*6995.35	A	20d?	0.75	2.51	½- ½	a^4P- 3°
5776.76	A	20	0.75	2.88	½- ½	(5)10°
5413.47	A	20w	0.75	3.03	½- ½	14°
5349.08	A	25w	0.75	3.05	½-1½	15°
5136.47	A	30w	0.75	3.15	½- ½	18°
4921.29	A	25	0.75	3.25	½-1½	21°
5419.19	A	30w	0.75	3.03	1½- ½	a^4P?-14°
5354.67	A	30w	0.75	3.05	1½-1½	(6) 15°
*5141.63	A	30w	0.75	3.15	1½- ½	18°
4926.02	A	35	0.75	3.25	1½-1½	21°
5939.75	A	20w	1.20	3.28	½-1½	a^6D-23° (7)
5944.01	A	30d?	1.23	3.31	1½-2½	3-24° (8)
5435.27	A	30	1.35	3.62	1½-2½	a^6D?-35° (9)
6045.38	A	30	1.39	3.43	2½-3½	a^6D-28° (10)
7148.61	A	30	1.51	3.24	3½-2½	a^6D-20°
6430.78	A	30	1.51	3.43	3½-3½	(11)28°
4936.41	A	30	1.51	4.01	3½-2½	52°
7346.37	A	30	1.65	3.33	4½-3½	a^6D-26°
6485.36	A	30	1.65	3.55	4½-4½	(12)32°
5997.24	A	35w	1.65	3.71	4½-4½	39°
5037.33	A	30w	1.65	4.10	4½-3½	53°
5404.95	A	35w	2.13	4.41	2½-1½	9-62° (13)

Ta II See introduction

W I I P 7.94 Anal A List D June 1941

4244.374	A	200	0.77	3.68	4-5	$d^4s^2\ ^5D$-$d^4sp\ ^7D^o$† (1)
4680.539	A	400	0.60	3.23	3-3	
4843.829	A	500	0.41	2.96	2-2	
5053.300	A	500	0.21	2.65	1-1	
5006.169	A	400	0.77	3.23	4-3	
5224.680	A	400	0.60	2.96	3-2	
5514.712	A	500	0.41	2.65	2-1	
4102.713	A	150	0.77	3.78	4-3	$d^4s^2\ ^5D$-$d^4sp\ ^5P^o$†
3881.402	A	100	0.60	3.78	3-3	(2)
3835.058	A	(5)	0.41	3.63	2-2	
*3757.093	A	(3)	0.77	4.05	4-4	$d^4s^2\ ^5D$-$d^4sp\ ^5D^o$†
3864.335	A	(3)	0.41	3.60	2-2	(3)
3829.133	A	(3)	0.21	3.43	1-1	
4219.383	A	(5)	0.77	3.69	4-3	
*3570.662	A	(6)	0.60	4.05	3-4	
3760.133	A	(4)	0.41	3.69	2-3	
3631.959	A	(5)	0.21	3.60	1-2	
3682.101	A	(5)	0.77	4.12	4-5	$d^4s^2\ ^5D$-$d^4sp\ ^5F^o$† (4)
*3757.929	A	(3)	0.60	3.88	3-4	
*3872.835	A	(4)	0.41	3.60	2-3	
4047.948	A	(2)	0.21	3.26	1-2	
3847.501	A	(3)	0.00	3.21	0-1	
*3570.662	A	(6)	0.41	3.87	2-1	$d^4s^2\ ^5D$-313°
3326.194	A	60	0.77	4.48	4-5	(5)362°
3300.819	A	150	0.60	4.34	3-4	351°
3215.578	A	150	0.77	4.61	4-5	373°
3191.577	A	60	0.00	3.87	0-1	313°
3176.602	A	30	0.21	4.09	1-2	331°
3046.452	A	50	0.21	4.26	1-2	344°
3041.876	A	25	0.41	4.47	2-1	361°
4008.769	A	1000	0.36	3.44	3-4	$d^5s\ ^7S$-$d^4sp\ ^7P^o$
4074.374	A	500	0.36	3.39	3-3	(6)
4294.623	A	1000	0.36	3.24	3-2	
3867.986	A	300	0.36	3.56	3-4	$d^5s\ ^7S$-$d^4sp\ ^7D^o$
4302.123	A	500	0.36	3.23	3-3	(7)
*4757.565	A	200	0.36	2.96	3-2	
3617.522	A	800	0.36	3.78	3-3	$d^5s\ ^7S$-$d^4sp\ ^5P^o$
3780.770	A	300	0.36	3.63	3-2	(8)
3207.248	A	80	0.36	4.21	3-4	$d^5s\ ^7S$- 341°
*3049.694	A	60	0.36	4.41	3-2	(9)357°
3017.447	A	60	0.36	4.45	3-4	360°

W II I P ? Anal D List D Dec 1942

3641.42	A	150	1.08	4.46	1½- ½	$^4F_{-1}$°
3286.57	A	100	1.08	4.83	1½-1½	(1)3°
3657.59	A	120	1.09	4.46	½- ½	1-1°
3361.11	A	100	1.09	4.76	½- ½	(2)2°
3572.48	A	200	1.31	4.76	1½- ½	2-2° (3)
3024.51	A	300	1.40	5.48	2½-2½	3-7° (4)
3149.87	A	500	1.63	5.54	½-1½	4-11° (5)
*3189.24	A	100 l	1.66	5.53	3½-4½	5- 9°
3177.23	A	150	1.66	5.54	3½-3½	(6)10°
3051.30	A	400	1.66	5.70	3½-3½	13°
3021.98	A	100	1.66	5.74	3½-4½	15°
3463.52	A	200	1.66	5.22	2½-1½	6- 5°
3179.44	A	150	1.66	5.54	2½-3½	(7)10°
3175.97	A	200	1.66	5.54	2½-1½	11°
3036.68	A	100	1.66	5.72	2½-2½	14°
3343.40	A	120	1.83	5.53	4½-4½	8- 9°
3160.03	A	300	1.83	5.74	4½-4½	(8)15°
3401.90	A	150	1.85	5.48	2½-2½	9- 7°
3342.46	A	300	1.85	5.54	2½-3½	(9)10°
3376.17	A	400	1.87	5.53	3½-4½	10- 9°
*3189.24	A	100 l	1.87	5.74	3½-4½	(10)15°
3555.18	A	120	2.00	5.48	2½-2½	11- 7°
3486.14	A	100	2.00	5.54	2½-1½	(11)11°
3539.57	A	100	2.04	5.54	4½-3½	12-10° (12)
3549.08	A	150	2.05	5.53	3½-4½	13- 9°
3358.63	A	200	2.05	5.72	3½-2½	(13)14°
3343.09	A	100	2.05	5.74	3½-4½	15°
*3243.36	A	100	2.05	5.85	3½-2½	17°
3010.76	A	100	2.35	6.45	4½-3½	15-27° (14)
*3243.36	A	100	2.47	6.28	3½-4½	16-33° (15)
3151.31	A	300	2.87	6.78	4½-5½	19-38° (16)
3345.86	A	200w	2.89	6.58	2½-1½	20-31° (17)

Re I I P 7.85 Anal B List D May 1942

4889.15	A	2000	0.00	2.52	2½-3½	a^6S-z^8P^o
5275.54	A	1000	0.00	2.34	2½-2½	(1)
3460.47 //	A	1000	0.00	3.57	2½-3½	a^6S-z^6P^o
3464.72	A	800	0.00	3.56	2½-2½	(2)
3451.88	A	600	0.00	3.58	2½-1½	

Os I I P 8.7 Anal C List D Dec 1942

4420.468	A	400R	0.00	2.79	4-4	1-26°
4260.854	A	200	0.00	2.90	4-5	(1)27°
3528.602	A	400R	0.00	3.50	4-4	32°
3301.559	A	500R	0.00	3.74	4-5	37°
3267.945	A	400R	0.00	3.78	4-4	39°
*3058.66	A	500R	0.00	4.03	4-4	41°
3752.524	A	400R	0.34	3.63	2-3	2-35° (2)
4135.784	A	200	0.51	3.50	3-4	3-32°
3963.628	A	500	0.51	3.63	3-3	(3)35°
3782.195	A	400R	0.51	3.78	3-4	39°
3336.150	A	200R	0.51	4.21	3-3	43°
3262.290	A	500R	0.51	4.30	3-4	45°
3232.055	A	500R	0.51	4.33	3-2	46°
4173.234	A	100	0.64	3.59	5-6	4-34°
3977.231	A	300	0.64	3.74	5-5	(4)37°
3370.588	A	300R	0.64	4.30	5-4	45°
3156.248	A	500R	0.64	4.55	5-5	53°
4112.018	A	150	0.71	3.71	1-2	5-36° (5)
3560.855	A	150R	1.08	4.55	4-5	7-53° (6)

Ir I I P 9.2 Anal B List D Dec 1942

3800.122	A	60r	0.00	3.25	4½-4½	a^4F-z^6D^o†
3448.967	A	60	0.50	4.08	1½-2½	(1)
3513.638	A	80r	0.00	3.51	4½-5½	a^4F-z^6F^o†
3266.446	A	60	0.71	4.49	2½-1½	(2)
3437.006	A	60	0.78	4.37	3½-3½	a^4F-z^6G^o† (3)
4268.096	A	80	0.88	3.77	3½-3½	b^4F-z^6D^o† (4)
3368.472	A	60	0.35	4.01	4½-4½	b^4F-z^6F^o†
3992.114	A	80	1.22	4.31	2½-2½	(5)
3220.772	A	100r	0.35	4.18	4½-3½	
3915.384	A	60	1.22	4.37	2½-3½	b^4F-z^6G^o†
3068.897	A	60	0.35	4.37	4½-3½	(6)
3198.917	A	60	0.88	4.74	3½-2½	b^4F-z^4D^o† (7)
3212.121	A	60	0.88	4.72	3½-4½	b^4F-z^4G^o† (8)

Pt I I P 9.2 Anal B List D Dec 1942

3315.05	A	8	0.00	3.73	3-4	a^3D-z^5D^o†
3290.23	A	6	1.25	5.00	1-2	(1)
3064.71	A	50	0.00	4.03	3-2	a^3D-z^3P^o†
3139.39	A	10	0.10	4.03	2-2	(2)
3156.59	A	10	1.25	5.16	1-1	
2997.97	A	30	0.10	4.21	2-3	a^3D-z^3F^o (3)
3408.14	A	15	0.10	3.73	4-4	a^3F-z^5D^o†
3966.37	A	6	1.25	4.36	3-3	(4)
3042.65	A	20	0.10	4.16	4-5	a^3F-z^5G^o (5)
4164.54	A	5	1.25	4.21	3-3	a^3F-z^3F^o†
3638.80	A	8	1.25	4.64	3-4	(6)
5368.97	A	3	1.91	4.21	2-3	
3301.87	A	10	0.81	4.55	2-2	a^3P-5° (7)

Pt II See introduction

Au I I P 9.2 Anal A List D Dec 1942

3122.782	B	(150)	1.13	5.08	2½-1½	a^2D-6^2P^o
6278.30	A	35n	2.65	4.61	1½- ½	(1)
*5064.69	A	15	2.65	5.08	1½-1½	
7510.74	A	200	5.08	6.73	1½- ½	6^2P^o-7^2S
5837.29	A	40	4.61	6.73	½- ½	(2)
4792.63	A	100	5.08	7.66	1½-2½	6^2P^o-6^2D
4065.09	A	45	4.61	7.65	½-1½	(3)
4811.61	A	60	5.08	7.65	1½-1½	

Au II See introduction

Hg I I P 10.39 Anal A List D Dec 1942

5460.742	A	500R	5.44	7.70	2-1	6^3P^o-7^3S
4358.343	A	300	4.87	7.70	1-1	(1)
4046.557	A	100	4.65	7.70	0-1	
3663.274	A	50R	5.44	8.81	2-2	6^3P^o-6^1D
3131.845	A	100	4.87	8.81	1-2	(2)
3650.144	A	100R	5.44	8.82	2-3	6^3P^o-6^3D†
3125.668	B	200R	4.87	8.81	1-2	(3)
5790.659	A	300	6.67	8.81	1-2	6^1P^o-6^1D (4)
5769.598	A	300	6.67	8.81	1-2	6^1P^o-6^3D† (5)

Many lines show fine structure

Hg II See introduction

Tl I I P 6.08 Anal A List D Dec 1942

5350.527//	A	500R	0.96	3.27	1½- ½	6^2P^o-7^2S
3775.734	A	500R	0.00	3.27	½- ½	(1)
3519.24	B	500R	0.96	4.47	1½-2½	6^2P^o-6^2D†
3529.38	B	100R	0.96	4.46	1½-1½	(2)

Many lines show fine structure

Tl II See introduction

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fb I I P 7.38 Anal A List D Dec 1942						
3639.568	A	500R	0.97	4.36	1-1	$6p^3P-7s^3P^o$ †
4057.812//	A	1000R	1.31	4.36	2-1	(1)
3683.469	A	1000R	0.97	4.32	1-0	
3739.940	A	300	2.65	5.95	2-2	$6p^1D-7s^3P^o$
7238.974	B	(2000)	2.65	4.36	2-1	(2)
3572.734	A	300R	2.65	6.10	2-1	$6p^1D-7s^1P^o$ (3)
Fb II See introduction						
Bi I I P ? Anal B List D Dec 1942						
3067.712//	A	9R	0.00	4.02	$1\frac{1}{2}-\frac{1}{2}$	$6p^4S^o-1$ (1)
4732.652 to 4732.333	B	(8) (10)	1.41	4.02	$1\frac{1}{2}-\frac{1}{2}$	$6p^3D^o-1$ (2)
Wide fine structure						
Bi II See introduction						
Rn I See introduction						
Ra I I P 5.25 Anal A List D May 1942						
4825.91 //	A	100	0.00	2.56	0-1	$7^1S-7^1P^o$ (1)
Ra II I P 10.10 Anal A List D May 1942						
3814.42 //	A	200	0.00	3.24	$\frac{1}{2}-1\frac{1}{2}$	$7^2S-7^2P^o$
4682.28	A	100	0.00	2.64	$\frac{1}{2}-\frac{1}{2}$	(1)
Th I No analysis Dec 1942						
Th II I P ? Anal C List D July 1944						
3539.589	A	400	0.00	3.49	$1\frac{1}{2}-2\frac{1}{2}$	$a^3D-z^4F^o$ † (1)
4277.322	A	400	0.00	2.89	$1\frac{1}{2}-1\frac{1}{2}$	$a^3D-y^3P^o$ † (2)
3610.794	A	30	0.51	3.93	$2\frac{1}{2}-3\frac{1}{2}$	$a^3D-y^3F^o$ †
4019.137//	A	1500	0.00	3.07	$1\frac{1}{2}-2\frac{1}{2}$	(3)
3180.199	A	400	0.19	4.07	$2\frac{1}{2}-3\frac{1}{2}$	$a^4F-z^4F^o$ † (4)
3392.040	A	300	0.19	3.83	$2\frac{1}{2}-3\frac{1}{2}$	$a^4F-y^3G^o$ † (5)
4391.114	A	600	0.55	3.36	$2\frac{1}{2}-3\frac{1}{2}$	$a^2F^o-z^4G$ † (6)
4919.814	A	500	0.76	3.27	$3\frac{1}{2}-2\frac{1}{2}$	$a^4H^o-z^4G$ † (7)
Th III See introduction						
U Not separated Dec 1942						

FORBIDDEN LINES

I A		E P Low	E P High	J	Multiplet (No)
Be I I P 9.28					
4548.3		0.00	(2.71)	0–1	$2s^2\ ^1S$–$2s2p^3\ ^3P^o$ (1F)
C I I P 11.20					
9849.5		0.01	1.26	2–2	$2p^2\ ^3P$–$2p^2\ ^1D$ (1F)
9823.4		0.00	1.26	1–2	
9808.9		0.00	1.26	0–2	
4627.3		0.01	2.67	2–0	$2p^2\ ^3P$–$2p^2\ ^1S$ (2F)
4621.5		0.00	2.67	1–0	
8727.4		1.26	2.67	2–0	$2p^2\ ^1D$–$2p^2\ ^1S$ (3F)
N I I P 14.49					
5200.7		0.00	2.37	1½–2½	$2p^3\ ^4S^o$–$2p^3\ ^2D^o$ (1F)
5198.5		0.00	2.37	1½–1½	
3466.4		0.00	3.56	1½–	$2p^3\ ^4S^o$–$2p^3\ ^2P^o$ (2F)
10395.4		2.37	3.56	2½–	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (3F)
10404.1		2.37	3.56	1½–	
N II I P 29.49					
6583.6	N	0.02	1.89	2–2	$2p^2\ ^3P$–$2p^2\ ^1D$ (1F)
6548.1	N	0.01	1.89	1–2	
6527.4		0.00	1.89	0–2	
3070.8		0.02	4.04	2–0	$2p^2\ ^3P$–$2p^2\ ^1S$ (2F)
3063.0		0.01	4.04	1–0	
5754.8	N	1.89	4.04	2–0	$2p^2\ ^1D$–$2p^2\ ^1S$ (3F)
O I I P 13.56					
6300.23	L	0.00	1.96	2–2	$2p^4\ ^3P$–$2p^4\ ^1D$ (1F)
6363.88	L	0.02	1.96	1–2	
2972.3		0.02	4.17	1–0	$2p^4\ ^3P$–$2p^4\ ^1S$ (2F)
5577.350A		1.96	4.17	2–0	$2p^4\ ^1D$–$2p^4\ ^1S$ (3F)
O II I P 35.00					
3728.91	N	0.00	3.31	1½–2½	$2p^3\ ^4S^o$–$2p^3\ ^2D^o$ (1F)
3726.16	N	0.00	3.31	1½–1½	
7319.4		3.31	5.00	2½–1½	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (2F)
7329.9		3.31	5.00	1½– ½	
7318.6		3.31	5.00	2½– ½	
7330.7		3.31	5.00	1½–1½	
O III I P 54.71					
5006.84	N	0.04	2.50	2–2	$2p^2\ ^3P$–$2p^2\ ^1D$ (1F)
4958.91	N	0.01	2.50	1–2	
4931.8		0.00	2.50	0–2	
4363.21	N	2.50	5.33	2–0	$2p^2\ ^1D$–$2p^2\ ^1S$ (2F)
F II I P 34.84					
4789.5		0.00	2.58	2–2	$2p^4\ ^3P$–$2p^4\ ^1D$ (1F)
4869.3		0.04	2.58	1–2	
4157.5		2.58	5.55	2–0	$2p^4\ ^1D$–$2p^4\ ^1S$ (2F)
F III I P 62.39					
5721.2		4.21	6.36	2½–	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (1F)
5733.0		4.21	6.36	1½–	
F IV I P 86.88					
4059.3		0.08	3.12	2–2	$2p^2\ ^3P$–$2p^2\ ^1D$ (1F)
3996.3		0.03	3.12	1–2	
3532.2		3.12	6.61	2–0	$2p^2\ ^1D$–$2p^2\ ^1S$ (2F)
Ne III I P 63.3					
3868.74	N	0.00	3.19	2–2	$2p^4\ ^3P$–$2p^4\ ^1D$ (1F)
3967.51	N	0.08	3.19	1–2	
3342.9		3.19	6.88	2–0	$2p^4\ ^1D$–$2p^4\ ^1S$ (2F)
Ne IV I P 96					
4716	?	(4.76	7.38)	2½–1½	$2p^3\ ^2P^o$–$2p^3\ ^2P^o$ (1F)
4720	?	(4.76	7.38)	1½– ½	
4714	?	(4.76	7.38)	2½– ½	
4717	?	(4.76	7.38)	1½–1½	
Ne V I P 126					
3425.8	N	0.10	(3.74)	2–2	$2p^2\ ^3P$–$2p^2\ ^1D$ (1F)
3345.9	N	0.05	(3.74)	1–2	
2972	?	(3.74	7.89)	2–0	$2p^2\ ^1D$–$2p^2\ ^1S$ (2F)
Na IV I P 98.5					
3319.3		0.00	3.72	2–2	$2p^4\ ^3P$–$2p^4\ ^1D$ (1F)
3445.9		0.14	3.72	1–2	
Na V I P 138.0					
4011.2		5.83	8.90	2½–1½	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (1F)
4021.6		5.83	8.90	1½– ½	
4017.5		5.83	8.90	2½– ½	
4015.3		5.83	8.90	1½–1½	
Mg VI I P 186.1					
3485.5		6.70	10.24	2½–1½	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (1F)
3503.0		6.70	10.23	1½– ½	
3500.4		6.70	10.23	2½– ½	
3488.1		6.70	10.24	1½–1½	
Al VII I P 241.1					
3074.0		7.59	11.61	2½–1½	$2p^3\ ^2D^o$–$2p^3\ ^2P^o$ (1F)
3093.4		7.59	11.58	1½– ½	
3098.7		7.59	11.58	2½– ½	
3068.8		7.59	11.61	1½–1½	
Si I I P 8.13					
6589.74		0.03	1.90	2–0	$3p^2\ ^3P$–$3p^2\ ^1S$ (1F)
6526.85		0.01	1.90	1–0	
10991.52		0.78	1.90	2–0	$3p^2\ ^1D$–$3p^2\ ^1S$ (2F)
P I I P 10.9					
8787.6		0.00	1.40	1½–2½	$3p^3\ ^4S^o$–$3p^3\ ^2D^o$ (1F)
8799.1		0.00	1.40	1½–1½	
5332.4		0.00	2.31	1½–1½	$3p^3\ ^4S^o$–$3p^3\ ^2P^o$ (2F)
5339.7		0.00	2.31	1½– ½	
P II I P 19.57					
11898.2		0.06	1.10	2–2	$3p^2\ ^3P$–$3p^2\ ^1D$ (1F)
11483.2		0.02	1.10	1–2	
4736.6		0.06	2.66	2–0	$3p^2\ ^3P$–$3p^2\ ^1S$ (2F)
4689.5		0.02	2.66	1–0	
P II continued					
7869.5		1.10	2.66	2–0	$3p^2\ ^1D$–$3p^2\ ^1S$ (3F)
S I I P 10.31					
10819.8		0.00	1.14	2–2	$3p^4\ ^3P$–$3p^4\ ^1D$ (1F)
11305.8		0.05	1.14	1–2	
4506.9		0.00	2.74	2–0	$3p^4\ ^3P$–$3p^4\ ^1S$ (2F)
4589.0		0.05	2.74	1–0	
7724.7		1.14	2.74	2–0	$3p^4\ ^1D$–$3p^4\ ^1S$ (3F)
S II I P 23.3					
4068.62	N	0.00	3.03	1½–1½	$3p^3\ ^4S^o$–$3p^3\ ^2P^o$ (1F)
4076.22	N	0.00	3.03	1½– ½	
6717.0		0.00	1.84	1½–2½	$3p^3\ ^4S^o$–$3p^3\ ^2D^o$ (2F)
6731.3		0.00	1.83	1½–1½	
10317.7		1.84	3.03	2½–1½	$3p^3\ ^2P^o$–$3p^3\ ^2P^o$ (3F)
10336.0		1.83	3.03	1½– ½	
10369.7		1.84	3.03	2½– ½	
10284.3		1.83	3.03	1½–1½	
S III I P 34.9					
9532.1		0.10	1.40	2–2	$3p^2\ ^3P$–$3p^2\ ^1D$ (1F)
9069.4		0.04	1.40	1–2	
3796.7		0.10	3.35	2–0	$3p^2\ ^3P$–$3p^2\ ^1S$ (2F)
3721.1		0.04	3.35	1–0	
6310.2		1.40	3.35	2–0	$3p^2\ ^1D$–$3p^2\ ^1S$ (3F)
S VIII I P ?					
9917.9		0.00	1.24	1½– ½	$2p^5\ ^2P^o$–$2p^5\ ^2P^o$ (1F)
S XII I P ?					
7536		0.00	1.64	½–1½	$2p^2P$–$2p^2P$ (1F)
Cl II I P 23.70					
8579.5		0.00	1.44	2–2	$3p^4\ ^3P$–$3p^4\ ^1D$ (1F)
9125.8		0.09	1.44	1–2	
3583.2		0.00	(3.44)	2–0	$3p^4\ ^3P$–$3p^4\ ^1S$ (2F)
3675.0		0.09	(3.44)	1–0	
6152.9		1.44	(3.44)	2–0	$3p^4\ ^1D$–$3p^4\ ^1S$ (3F)
Cl III I P 39.7					
3342.7		0.00	3.69	1½–1½	$3p^3\ ^4S^o$–$3p^3\ ^2P^o$ (2F)
3353.4		0.00	3.68	1½– ½	
5517.2		0.00	2.24	1½–2½	$3p^3\ ^4S^o$–$3p^3\ ^2D^o$ (1F)
5537.7		0.00	2.23	1½–1½	
8481.6		2.24	3.69	2½–1½	$3p^3\ ^2D^o$–$3p^3\ ^2P^o$ (3F)
8501.8		2.23	3.68	1½– ½	
8550.5		2.24	3.68	2½– ½	
8433.7		2.23	3.69	1½–1½	
Cl IV I P 53.2					
8046.1		0.17	1.70	2–2	$3p^2\ ^3P$–$3p^2\ ^1D$ (1F)
7530.9		0.06	1.70	1–2	
3203.3		0.17	4.02	2–0	$3p^2\ ^3P$–$3p^2\ ^1S$ (2F)
3118.3		0.06	4.02	1–0	
5322.2		1.70	4.02	2–0	$3p^2\ ^1D$–$3p^2\ ^1S$ (3F)

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
A III I P 40.8				
7135.8	0.00	1.73	2-2	$3p^4\ ^3P-3p^4\ ^1D$
7751.0	0.14	1.73	1-2	(1F)
3005.1	0.00	(4.11)	2-0	$3p^4\ ^3P-3p^4\ ^1S$
3109.0	0.14	(4.11)	1-0	(2F)
5191.4 N	1.73	(4.11)	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (3F)
A IV I P 61				
4711.4	0.00	2.62	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$
4740.3	0.00	2.60	1½-1½	(1F)
7236.0	2.82	4.33	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$
7263.3	2.60	4.30	1½- ½	(2F)
7332.0	2.62	4.30	2½- ½	
7169.0	2.60	4.33	1½-1½	
A V I P 78				
7006.3	0.25	2.01	2-2	$3p^2\ ^3P-3p^2\ ^1D$
6434.9	0.09	2.01	1-2	(1F)
4610 ?	2.01	(4.69)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
A X I P ?				
5534.6	0.00	2.23	1½- ½	$2p^5\ ^2P^o-2p^5\ ^2P^o$ (1F)
A XI I P ?				
6919	0.00	1.78	2-1	$2p^4\ ^3P-2p^4\ ^3P$ (1F)
A XIV I P ?				
4359 ?	0.00	2.83	½-1½	$2p^2P^o-2p^2P^o$ (1F)
K IV I P 62.5				
6101.1	0.00	2.02	2-2	$3p^4\ ^3P-3p^4\ ^1D$
6794.8	0.21	2.02	1-2	(1F)
.0	2.02	4.76	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
K V I P ?				
4125 ?	0.00	(2.99)	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$
4166 ?	0.00	(2.96)	1½-1½	(1F)
6316.6	(2.99	4.95)	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$
6349.5	(2.96	4.91)	1½- ½	(2F)
6446.5	(2.99	4.91)	2½- ½	
6223.4	(2.96	4.95)	1½-1½	
K VI I P ?				
6229.2	0.36	2.34	2-2	$3p^2\ ^3P-3p^2\ ^1D$
5603.2	0.14	2.34	1-2	(1F)
4097 ?	2.34	(5.35)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
Ca I I P 6.09				
4912.82	0.00	2.51	0-2	4^1S-3^3D
4916.18	0.00	2.51	0-1	(1F)
4575.46	0.00	2.70	0-2	4^1S-3^1D (2F)
Ca II I P 11.82				
7291.46	0.00	1.69	½-2½	4^2S-3^2D
7323.88	0.00	1.69	½-1½	(1F)
Ca V I P 84				
5308.9	0.00	2.32	2-2	$3p^4\ ^3P-3p^4\ ^1D$
6085.9	0.30	2.32	1-2	(1F)
3996.3	2.32	5.41	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
Ca VI I P ?				
3646.3	0.00	3.38	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$
3702.7	0.00	3.33	1½-1½	(1F)
5587.2	3.38	5.59	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$
5631.0	3.33	5.52	1½- ½	(2F)
5766.4	3.38	5.52	2½- ½	
5460.0	3.33	5.59	1½-1½	
Ca VII I P ?				
5615.8	0.50	2.70	2-2	$3p^2\ ^3P-3p^2\ ^1D$
4938.6	0.20	2.70	1-2	(1F)
3688 ?	2.70	(6.05)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
Ca XII I P 655				
3329.3	0.00	3.71	1½- ½	$2p^5\ ^2P^o-2p^5\ ^2P^o$ (1F)
Ca XIII I P ?				
4086.5	0.00	3.02	2-1	$2p^4\ ^2P-2p^4\ ^2P$ (1F)
Ca XV I P ?				
5648 ?	0.00	(2.19)	0-1	$2p^2\ ^3P-2p^2\ ^3P$ (1F)
Sc II I P 12.8				
9285.20	0.02	1.35	3-2	a^3D-b^1D
9191.34	0.01	1.35	2-2	(1F)
9134.50	0.00	1.35	1-2	
8649.11	0.02	1.45	3-0	a^3D-a^1S
8567.60	0.01	1.45	2-0	(2F)
8518.20	0.00	1.45	1-0	
8347.24	0.02	1.50	3-2	a^3D-a^3P
8307.67	0.01	1.49	2-1	(3F)
8279.99	0.00	1.49	1-0	
8384.28	0.02	1.49	3-1	
8326.66	0.01	1.49	2-0	
8271.32	0.01	1.50	2-2	
8261.21	0.00	1.49	1-1	
8403.62	0.02	1.49	3-0	
8225.25	0.00	1.50	1-2	
11896.48	0.31	1.35	2-2	a^1D-b^1D (4F)
10872.05	0.31	1.45	2-0	a^1D-a^1S (5F)
10399.33	0.31	1.50	2-2	a^1D-a^3P
10456.86	0.31	1.49	2-1	(6F)
10486.97	0.31	1.49	2-0	
10780.17	0.62	1.76	4-4	a^3F-a^1G
10660.35	0.60	1.76	3-4	(7F)
10569.44	0.59	1.76	2-4	
Sc III I P 24.65				
3945.34	0.02	3.15	2½- ½	3^2D-4^2S
3914.83	0.00	3.15	1½- ½	(1F)
Sc VI I P 111?				
4672.2	0.00	2.64	2-2	$3p^4\ ^3P-3p^4\ ^1D$
5539.6	0.41	2.64	1-2	(1F)
3590.8	2.64	6.08	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
Sc VII I P ?				
4987 ?	(0.08	2.56)	2½-1½	$3p^3\ ^2P^o-3p^3\ ^2P^o$
5045 ?	(0.00	2.45)	1½- ½	(1F)
5224 ?	(0.08	2.45)	2½- ½	
4824 ?	(0.00	2.56)	1½-1½	
Ti I I P 6.81				
12168.80	0.05	1.06	4-2	a^3F-a^3P
12012.60	0.02	1.05	3-1	(1F)
11849.83	0.00	1.04	2-0	
11856.02	0.02	1.06	3-2	
11771.95	0.00	1.05	2-1	
11621.54	0.00	1.06	2-2	
8777.86	0.05	1.45	4-4	a^3F-b^3F
8716.24	0.02	1.44	3-3	(2F)
8669.28	0.00	1.42	2-2	
8884.12	0.05	1.44	4-3	
8799.09	0.02	1.42	3-2	
8613.35	0.02	1.45	3-4	
8588.84	0.00	1.44	2-3	
8970.23	0.05	1.42	4-2	
8488.93	0.00	1.45	2-4	
8521.66	0.05	1.50	4-4	a^3F-a^1G
8367.07	0.02	1.50	3-4	(3F)
8249.61	0.00	1.50	2-4	
7287.25	0.05	1.74	4-3	a^3F-a^5P
7213.88	0.02	1.73	3-2	(4F)
7150.21	0.00	1.73	2-1	
7328.50	0.05	1.73	4-2	
7238.29	0.02	1.73	3-1	
7173.92	0.02	1.74	3-3	
7126.40	0.00	1.73	2-2	
7087.39	0.00	1.74	2-3	
6739.63	0.05	1.88	4-5	a^3F-a^3G
6670.76	0.02	1.87	3-4	(5F)
6617.12	0.00	1.87	2-3	
6768.65	0.05	1.87	4-4	
6692.48	0.02	1.87	3-3	
6791.02	0.05	1.87	4-3	
6642.57	0.02	1.88	3-5	
6595.88	0.00	1.87	2-4	
5828.12	0.05	2.17	4-3	a^3F-a^3D
5794.16	0.02	2.15	3-2	(6F)
5755.60	0.00	2.14	2-1	
5867.87	0.05	2.15	4-2	
5812.53	0.02	2.14	3-1	
5755.39	0.02	2.17	3-3	
5737.59	0.00	2.15	2-2	
5699.57	0.00	2.17	2-3	
5629.54	0.05	2.24	4-2	a^3F-b^3P
5587.73	0.02	2.23	3-1	(7F)
5555.33	0.00	2.22	2-0	
5561.66	0.02	2.24	3-2	
5535.09	0.00	2.23	2-1	
5509.51	0.00	2.24	2-2	
5614.62	0.05	2.25	4-6	a^3F-a^3H
5562.94	0.02	2.24	3-5	(8F)
5542.54	0.00	2.23	2-4	
5630.85	0.05	2.24	4-5	
5595.31	0.02	2.23	3-4	
5664.02	0.05	2.23	4-4	
5584.81	0.05	2.26	4-4	a^3F-b^1G
5518.00	0.02	2.26	3-4	(9F)
5466.67	0.00	2.26	2-4	
5396.71	0.05	2.33	4-2	a^3F-c^3P
5358.79	0.02	2.32	3-1	(10F)
5312.52	0.00	2.32	2-0	
5334.30	0.02	2.33	3-2	
5310.36	0.00	2.32	2-1	
5286.31	0.00	2.33	2-2	
5025.53	0.02	2.48	3-1	a^3F-a^1P
4982.92	0.00	2.48	2-1	(11F)
5043.30	0.05	2.49	4-2	a^3F-b^1D
4988.75	0.02	2.49	3-2	(12F)
4946.76	0.00	2.49	2-2	
4898.49	0.05	2.57	4-5	a^3F-a^1H
4847.01	0.02	2.57	3-5	(13F)
11933.60	0.84	1.88	5-5	a^5F-a^3G
11881.68	0.83	1.87	4-4	(14F)
11835.06	0.82	1.87	3-3	
12024.89	0.84	1.87	5-4	
11950.77	0.83	1.87	4-3	
11792.55	0.83	1.88	4-5	
11767.30	0.82	1.87	3-4	
11748.60	0.81	1.87	2-3	
12095.67	0.84	1.87	5-3	
11679.85	0.82	1.88	3-5	
11681.81	0.81	1.87	2-4	
11690.94	0.81	1.87	1-3	
9258.83	0.83	2.17	4-3	a^5F-a^3D
9288.45	0.82	2.15	3-2	(15F)
9281.86	0.81	2.14	2-1	
9189.22	0.82	2.17	3-3	
9235.10	0.81	2.15	2-2	
9245.82	0.81	2.14	1-1	
9137.01	0.81	2.17	2-3	
9199.44	0.81	2.15	1-2	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Ti I continued				
8705.08	0.82	2.24	3-2	a^5F-b^3P (16F)
8721.54	0.81	2.23	2-1	
8739.71	0.81	2.22	1-0	
8658.20	0.81	2.24	2-2	
8689.73	0.81	2.23	1-1	
8626.85	0.81	2.24	1-2	
8808.47	0.84	2.25	5-6	a^5F-a^3H
8770.71	0.83	2.24	4-5	(17F)
8787.81	0.82	2.23	3-4	
8848.50	0.84	2.24	5-5	
8851.45	0.83	2.23	4-4	
8930.70	0.84	2.23	5-4	
8731.38	0.83	2.25	4-6	
8708.23	0.82	2.24	3-5	
8740.05	0.81	2.23	2-4	
8160.66	0.82	2.33	3-2	a^5F-c^3P (18F)
8176.33	0.81	2.32	2-1	
8153.46	0.81	2.32	1-0	
8119.46	0.81	2.33	2-2	
8148.37	0.81	2.32	1-1	
8091.87	0.81	2.33	1-2	
4521.76	0.84	3.57	5-4	a^5F-a^5D (19F)
4515.52	0.83	3.57	4-3	
4509.85	0.82	3.56	3-2	
4504.71	0.81	3.55	2-1	
4500.00	0.81	3.55	1-0	
4536.05	0.84	3.57	5-3	
4526.55	0.83	3.56	4-2	
4517.36	0.82	3.55	3-1	
4508.52	0.81	3.55	2-0	
4501.36	0.83	3.57	4-4	
4498.90	0.82	3.57	3-3	
4497.23	0.81	3.56	2-2	
4496.21	0.81	3.55	1-1	
4484.84	0.82	3.57	3-4	
4486.35	0.81	3.57	2-3	
4488.76	0.81	3.56	1-2	
4472.37	0.81	3.57	2-4	
4477.91	0.81	3.57	1-3	
9720.20	0.90	2.17	2-3	a^1D-a^3D (20F)
9831.29	0.90	2.15	2-2	
9884.29	0.90	2.14	2-1	
9180.13	0.90	2.24	2-2	a^1D-b^3P (21F)
9251.37	0.90	2.23	2-1	
9308.03	0.90	2.22	2-0	
8576.73	0.90	2.33	2-2	a^1D-c^3P (22F)
8640.22	0.90	2.32	2-1	
8645.95	0.90	2.32	2-0	
7805.66	0.90	2.48	2-1	a^1D-a^1P (23F)
7717.29	0.90	2.49	2-2	a^1D-b^1D (24F)
4430.79	0.90	3.68	2-3	a^1D-a^1F (25F)
11185.14	1.06	2.17	2-3	a^3P-a^3D (26F)
11193.04	1.05	2.15	1-2	
11191.43	1.04	2.14	0-1	
11332.50	1.06	2.15	2-2	
11261.79	1.05	2.14	1-1	
11402.97	1.06	2.14	2-1	
11049.28	1.05	2.17	1-3	
11123.53	1.04	2.15	0-2	
10475.96	1.06	2.24	2-2	a^3P-b^3P (27F)
10447.44	1.05	2.23	1-1	
10568.84	1.06	2.23	2-1	
10519.77	1.05	2.22	1-0	
10356.68	1.05	2.24	1-2	
10386.86	1.04	2.23	0-1	
10642.86	1.06	2.22	2-0	
10297.14	1.04	2.24	0-2	
9697.42	1.06	2.33	2-2	a^3P-c^3P (28F)
9674.66	1.05	2.32	1-1	
9778.67	1.06	2.32	2-1	
9681.84	1.05	2.32	1-0	
9595.12	1.05	2.33	1-2	
9622.68	1.04	2.32	0-1	
9786.00	1.06	2.32	2-0	
9544.00	1.04	2.33	0-2	
8723.13	1.06	2.48	2-1	a^3P-a^1P (29F)
8640.27	1.05	2.48	1-1	
8598.79	1.04	2.48	0-1	
8612.91	1.06	2.49	2-2	a^3P-b^1D (30F)
8532.12	1.05	2.49	1-2	
11665.66	1.44	2.49	3-2	b^3F-b^1D (31F)
11520.46	1.42	2.49	2-2	
11084.87	1.45	2.57	4-5	b^3F-a^1H (32F)
11521.31	1.50	2.57	4-5	a^1G-a^1H (33F)

I A	E P Low	E P High	J	Multiplet (No)
Ti II I P 13.6				
11971.26	0.05	1.08	$4\frac{1}{2}$-$2\frac{1}{2}$	a^4F-a^2D (1F)
11782.27	0.03	1.08	$3\frac{1}{2}$-$1\frac{1}{2}$	
11735.52	0.03	1.08	$3\frac{1}{2}$-$2\frac{1}{2}$	
11602.41	0.01	1.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
11557.08	0.01	1.08	$2\frac{1}{2}$-$2\frac{1}{2}$	
11477.29	0.00	1.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
11432.93	0.00	1.08	$1\frac{1}{2}$-$2\frac{1}{2}$	
11458.27	0.05	1.13	$4\frac{1}{2}$-$4\frac{1}{2}$	a^4F-a^2G (2F)
11396.50	0.03	1.11	$3\frac{1}{2}$-$3\frac{1}{2}$	
11618.68	0.05	1.11	$4\frac{1}{2}$-$3\frac{1}{2}$	
11242.12	0.03	1.13	$3\frac{1}{2}$-$4\frac{1}{2}$	
11328.14	0.01	1.11	$2\frac{1}{2}$-$3\frac{1}{2}$	
11078.26	0.01	1.13	$2\frac{1}{2}$-$4\frac{1}{2}$	
11110.92	0.00	1.11	$1\frac{1}{2}$-$3\frac{1}{2}$	
10956.10	0.05	1.18	$4\frac{1}{2}$-$2\frac{1}{2}$	a^4F-a^4P (3F)
10901.79	0.03	1.16	$3\frac{1}{2}$-$1\frac{1}{2}$	
10784.80	0.01	1.16	$2\frac{1}{2}$- $\frac{1}{2}$	
10758.32	0.03	1.18	$3\frac{1}{2}$-$2\frac{1}{2}$	
10747.64	0.01	1.16	$2\frac{1}{2}$-$1\frac{1}{2}$	
10676.61	0.00	1.16	$1\frac{1}{2}$- $\frac{1}{2}$	
10608.18	0.01	1.18	$2\frac{1}{2}$-$2\frac{1}{2}$	
10640.19	0.00	1.16	$1\frac{1}{2}$-$1\frac{1}{2}$	
10503.47	0.00	1.18	$1\frac{1}{2}$-$2\frac{1}{2}$	
10116.66	0.01	1.23	$2\frac{1}{2}$-$1\frac{1}{2}$	a^4F-a^2P (4F)
10148.57	0.00	1.22	$1\frac{1}{2}$- $\frac{1}{2}$	
10021.39	0.00	1.23	$1\frac{1}{2}$-$1\frac{1}{2}$	
10379.73	0.05	1.24	$4\frac{1}{2}$-$2\frac{1}{2}$	a^4F-b^4P (5F)
10300.86	0.03	1.23	$3\frac{1}{2}$-$1\frac{1}{2}$	
10223.27	0.01	1.22	$2\frac{1}{2}$- $\frac{1}{2}$	
10202.05	0.03	1.24	$3\frac{1}{2}$-$2\frac{1}{2}$	
10163.13	0.01	1.23	$2\frac{1}{2}$-$1\frac{1}{2}$	
10125.99	0.00	1.22	$1\frac{1}{2}$- $\frac{1}{2}$	
10066.92	0.01	1.24	$2\frac{1}{2}$-$2\frac{1}{2}$	
10066.98	0.00	1.23	$1\frac{1}{2}$-$1\frac{1}{2}$	
9972.59	0.00	1.24	$1\frac{1}{2}$-$2\frac{1}{2}$	
8085.17	0.05	1.57	$4\frac{1}{2}$-$2\frac{1}{2}$	a^4F-b^2D (6F)
8060.16	0.03	1.56	$3\frac{1}{2}$-$1\frac{1}{2}$	
7976.95	0.03	1.57	$3\frac{1}{2}$-$2\frac{1}{2}$	
7975.58	0.01	1.56	$2\frac{1}{2}$-$1\frac{1}{2}$	
7894.10	0.01	1.57	$2\frac{1}{2}$-$2\frac{1}{2}$	
7916.25	0.00	1.56	$1\frac{1}{2}$-$1\frac{1}{2}$	
7835.98	0.00	1.57	$1\frac{1}{2}$-$2\frac{1}{2}$	
8074.29	0.05	1.58	$4\frac{1}{2}$-$5\frac{1}{2}$	a^4F-a^2H (7F)
8028.94	0.03	1.56	$3\frac{1}{2}$-$4\frac{1}{2}$	
8138.59	0.05	1.56	$4\frac{1}{2}$-$4\frac{1}{2}$	
7966.36	0.03	1.58	$3\frac{1}{2}$-$5\frac{1}{2}$	
7945.02	0.01	1.56	$2\frac{1}{2}$-$4\frac{1}{2}$	
6725.67	0.05	1.88	$4\frac{1}{2}$-$4\frac{1}{2}$	a^4F-b^2G (8F)
6647.05	0.03	1.88	$3\frac{1}{2}$-$3\frac{1}{2}$	
6722.02	0.05	1.88	$4\frac{1}{2}$-$3\frac{1}{2}$	
6650.61	0.03	1.88	$3\frac{1}{2}$-$4\frac{1}{2}$	
6589.42	0.01	1.88	$2\frac{1}{2}$-$3\frac{1}{2}$	
6592.93	0.01	1.88	$2\frac{1}{2}$-$4\frac{1}{2}$	
6548.87	0.00	1.88	$1\frac{1}{2}$-$3\frac{1}{2}$	
6095.96	0.03	2.05	$3\frac{1}{2}$-$1\frac{1}{2}$	a^4F-b^2P (9F)
6087.77	0.01	2.04	$2\frac{1}{2}$- $\frac{1}{2}$	
6047.46	0.01	2.05	$2\frac{1}{2}$-$1\frac{1}{2}$	
6053.14	0.00	2.04	$1\frac{1}{2}$- $\frac{1}{2}$	
6013.28	0.00	2.05	$1\frac{1}{2}$-$1\frac{1}{2}$	
4877.01	0.05	2.58	$4\frac{1}{2}$-$3\frac{1}{2}$	a^4F-b^2F (10F)
4823.44	0.03	2.59	$3\frac{1}{2}$-$2\frac{1}{2}$	
4862.80	0.05	2.59	$4\frac{1}{2}$-$2\frac{1}{2}$	
4837.42	0.03	2.58	$3\frac{1}{2}$-$3\frac{1}{2}$	
4793.03	0.01	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
4806.83	0.01	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	
4771.54	0.00	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	
4785.21	0.00	2.58	$1\frac{1}{2}$-$3\frac{1}{2}$	
4031.15	0.05	3.11	$4\frac{1}{2}$-$3\frac{1}{2}$	a^4F-c^2D (11F)
4041.57	0.03	3.08	$3\frac{1}{2}$-$1\frac{1}{2}$	
4004.07	0.03	3.11	$3\frac{1}{2}$-$2\frac{1}{2}$	
4020.20	0.01	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
3983.08	0.01	3.11	$2\frac{1}{2}$-$3\frac{1}{2}$	
4005.07	0.00	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
3968.23	0.00	3.11	$1\frac{1}{2}$-$3\frac{1}{2}$	
11857.96	0.13	1.18	$3\frac{1}{2}$-$2\frac{1}{2}$	b^4F-a^4P (12F)
11884.57	0.12	1.16	$2\frac{1}{2}$-$1\frac{1}{2}$	
11823.03	0.11	1.16	$1\frac{1}{2}$- $\frac{1}{2}$	
11714.28	0.12	1.18	$2\frac{1}{2}$-$2\frac{1}{2}$	
11778.39	0.11	1.16	$1\frac{1}{2}$-$1\frac{1}{2}$	
11611.10	0.11	1.18	$1\frac{1}{2}$-$2\frac{1}{2}$	
11117.80	0.12	1.23	$2\frac{1}{2}$-$1\frac{1}{2}$	b^4F-a^2P (13F)
11178.94	0.11	1.22	$1\frac{1}{2}$- $\frac{1}{2}$	
11024.82	0.11	1.23	$1\frac{1}{2}$-$1\frac{1}{2}$	
11185.70	0.13	1.24	$3\frac{1}{2}$-$2\frac{1}{2}$	b^4F-b^4P (14F)
11173.94	0.12	1.23	$2\frac{1}{2}$-$1\frac{1}{2}$	
11151.54	0.11	1.22	$1\frac{1}{2}$- $\frac{1}{2}$	
11057.76	0.12	1.24	$2\frac{1}{2}$-$2\frac{1}{2}$	
11080.02	0.11	1.23	$1\frac{1}{2}$-$1\frac{1}{2}$	
10965.77	0.11	1.24	$1\frac{1}{2}$-$2\frac{1}{2}$	
8661.20	0.15	1.57	$4\frac{1}{2}$-$2\frac{1}{2}$	b^4F-b^2D (15F)
8661.96	0.13	1.56	$3\frac{1}{2}$-$1\frac{1}{2}$	
8565.94	0.13	1.57	$3\frac{1}{2}$-$2\frac{1}{2}$	
8585.04	0.12	1.56	$2\frac{1}{2}$-$1\frac{1}{2}$	
8490.71	0.12	1.57	$2\frac{1}{2}$-$2\frac{1}{2}$	
8529.50	0.11	1.56	$1\frac{1}{2}$-$1\frac{1}{2}$	
8436.37	0.11	1.57	$1\frac{1}{2}$-$2\frac{1}{2}$	

I A	E P Low	E P High	J	Multiplet (No)
Ti II continued				
8648.72	0.15	1.58	$4\frac{1}{2}$-$5\frac{1}{2}$	b^4F-a^2H (16F)
8625.93	0.13	1.56	$3\frac{1}{2}$-$4\frac{1}{2}$	
8722.54	0.15	1.56	$4\frac{1}{2}$-$4\frac{1}{2}$	
8553.73	0.13	1.58	$3\frac{1}{2}$-$5\frac{1}{2}$	
8549.64	0.12	1.56	$2\frac{1}{2}$-$4\frac{1}{2}$	
7119.56	0.15	1.88	$4\frac{1}{2}$-$4\frac{1}{2}$	b^4F-b^2G (17F)
7051.04	0.13	1.88	$3\frac{1}{2}$-$3\frac{1}{2}$	
7115.47	0.15	1.88	$4\frac{1}{2}$-$3\frac{1}{2}$	
7055.06	0.13	1.88	$3\frac{1}{2}$-$4\frac{1}{2}$	
6999.99	0.12	1.88	$2\frac{1}{2}$-$3\frac{1}{2}$	
7003.95	0.12	1.88	$2\frac{1}{2}$-$4\frac{1}{2}$	
6963.02	0.11	1.88	$1\frac{1}{2}$-$3\frac{1}{2}$	
6434.04	0.13	2.05	$3\frac{1}{2}$-$1\frac{1}{2}$	b^4F-b^2P (18F)
6436.55	0.12	2.04	$2\frac{1}{2}$- $\frac{1}{2}$	
6391.51	0.13	2.05	$2\frac{1}{2}$-$1\frac{1}{2}$	
6405.27	0.11	2.04	$1\frac{1}{2}$- $\frac{1}{2}$	
6360.66	0.11	2.05	$1\frac{1}{2}$-$1\frac{1}{2}$	
5080.84	0.15	2.58	$4\frac{1}{2}$-$3\frac{1}{2}$	b^4F-b^2F (19F)
5032.69	0.13	2.59	$3\frac{1}{2}$-$2\frac{1}{2}$	
5065.43	0.15	2.59	$4\frac{1}{2}$-$2\frac{1}{2}$	
5047.91	0.13	2.58	$3\frac{1}{2}$-$3\frac{1}{2}$	
5006.63	0.12	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
5021.69	0.12	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	
4987.68	0.11	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	
5002.63	0.11	2.58	$1\frac{1}{2}$-$3\frac{1}{2}$	
4169.41	0.15	3.11	$4\frac{1}{2}$-$2\frac{1}{2}$	b^4F-c^2D (20F)
4187.46	0.13	3.08	$3\frac{1}{2}$-$1\frac{1}{2}$	
4147.21	0.13	3.11	$3\frac{1}{2}$-$2\frac{1}{2}$	
4169.40	0.12	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
4129.49	0.12	3.11	$2\frac{1}{2}$-$2\frac{1}{2}$	
4156.25	0.11	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
4116.60	0.11	3.11	$1\frac{1}{2}$-$2\frac{1}{2}$	
9649.94	0.60	1.88	$3\frac{1}{2}$-$4\frac{1}{2}$	a^2F-b^2G (21F)
9398.59	0.57	1.88	$2\frac{1}{2}$-$3\frac{1}{2}$	
9642.42	0.60	1.88	$3\frac{1}{2}$-$3\frac{1}{2}$	
9405.71	0.57	1.88	$2\frac{1}{2}$-$4\frac{1}{2}$	
6250.51	0.60	2.58	$3\frac{1}{2}$-$3\frac{1}{2}$	a^2F-b^2F (22F)
6124.57	0.57	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
6227.19	0.60	2.59	$3\frac{1}{2}$-$2\frac{1}{2}$	
6147.13	0.57	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	
4925.84	0.60	3.11	$3\frac{1}{2}$-$2\frac{1}{2}$	a^2F-c^2D (23F)
4916.81	0.57	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
4982.73	0.60	3.08	$3\frac{1}{2}$-$1\frac{1}{2}$	
4861.41	0.57	3.11	$2\frac{1}{2}$-$2\frac{1}{2}$	
8229.81	1.08	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	a^2D-b^2F (24F)
8166.83	1.08	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	
8189.44	1.08	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
7917.03	1.08	2.63	$1\frac{1}{2}$- $\frac{1}{2}$	a^2D-a^2S (25F)
6077.80	1.08	3.11	$2\frac{1}{2}$-$2\frac{1}{2}$	a^2D-c^2D (26F)
6151.82	1.08	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
6164.64	1.08	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
6065.34	1.08	3.11	$1\frac{1}{2}$-$2\frac{1}{2}$	
8491.16	1.13	2.58	$4\frac{1}{2}$-$3\frac{1}{2}$	a^2G-b^2F (27F)
8363.05	1.11	2.59	$3\frac{1}{2}$-$2\frac{1}{2}$	
8405.16	1.11	2.58	$3\frac{1}{2}$-$3\frac{1}{2}$	
6172.91	1.11	3.11	$3\frac{1}{2}$-$2\frac{1}{2}$	a^2G-c^2D (28F)
8789.70	1.18	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	a^4P-b^2F (29F)
8651.14	1.16	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	
8743.66	1.18	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
8371.34	1.16	2.63	$1\frac{1}{2}$- $\frac{1}{2}$	a^4P-a^2S (30F)
8348.93	1.16	2.63	$\frac{1}{2}$- $\frac{1}{2}$	
6377.83	1.18	3.11	$2\frac{1}{2}$-$2\frac{1}{2}$	a^4P-c^2D (31F)
6422.66	1.16	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
6473.52	1.18	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
6328.46	1.16	3.11	$1\frac{1}{2}$-$2\frac{1}{2}$	
6409.46	1.16	3.08	$\frac{1}{2}$-$1\frac{1}{2}$	
9108.42	1.23	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	a^2P-b^2F (32F)
8798.79	1.23	2.63	$1\frac{1}{2}$- $\frac{1}{2}$	a^2P-a^2S (33F)
8703.03	1.22	2.63	$\frac{1}{2}$- $\frac{1}{2}$	
6569.73	1.23	3.11	$1\frac{1}{2}$-$2\frac{1}{2}$	a^2P-c^2D (34F)
6616.12	1.22	3.08	$\frac{1}{2}$-$1\frac{1}{2}$	
6671.31	1.23	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
9199.54	1.24	2.58	$2\frac{1}{2}$-$3\frac{1}{2}$	b^4P-b^2F (35F)
9071.07	1.23	2.59	$1\frac{1}{2}$-$2\frac{1}{2}$	
9149.11	1.24	2.59	$2\frac{1}{2}$-$2\frac{1}{2}$	
8763.95	1.23	2.63	$1\frac{1}{2}$- $\frac{1}{2}$	b^4P-a^2S (36F)
8719.70	1.22	2.63	$\frac{1}{2}$- $\frac{1}{2}$	
6590.88	1.24	3.11	$2\frac{1}{2}$-$2\frac{1}{2}$	b^4P-c^2D (37F)
6651.26	1.23	3.08	$1\frac{1}{2}$-$1\frac{1}{2}$	
6693.12	1.24	3.08	$2\frac{1}{2}$-$1\frac{1}{2}$	
6550.29	1.23	3.11	$1\frac{1}{2}$-$2\frac{1}{2}$	
6625.75	1.22	3.08	$\frac{1}{2}$-$1\frac{1}{2}$	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Ti II continued				
11478.92	1.56	2.63	1½- ½	b^3D-a^3S (38F)
8039.68	1.57	3.11	2½-2½	b^3D-c^3D (39F)
8106.38	1.56	3.08	1½-1½	
8198.33	1.57	3.08	2½-1½	
7956.90	1.56	3.11	1½-2½	
Ti III I P 27.6				
12417.8	0.05	1.05	4-3	a^3F-a^1D (1F)
12061.0	0.02	1.05	3-2	
11799.5	0.00	1.05	2-2	
9706.8	0.05	1.32	4-2	a^3F-a^3P (2F)
9594.5	0.02	1.31	3-1	
[illegible]8.3	0.00	1.30	2-0	
[illegible]87.4	0.02	1.32	3-2	
9428.3	0.00	1.31	2-1	
9384.8	0.00	1.32	2-2	
7152.8	0.05	1.78	4-4	a^3F-a^1G (3F)
7033.0	0.02	1.78	3-4	
6991.8	0.00	1.78	2-4	
[illegible]7.7	1.05	4.74	2-3	a^1D-a^3D (4F)
[illegible].8	1.05	4.73	2-2	
[illegible]8.4	1.05	4.70	2-1	
3008.4	1.05	5.15	2-2	a^1D-b^1D (5F)
3608.5	1.32	4.74	2-3	a^3P-a^3D (6F)
3622.9	1.31	4.73	1-2	
3631.8	1.30	4.70	0-1	
3638.4	1.32	4.73	2-2	
3640.6	1.31	4.70	1-1	
3656.3	1.32	4.70	2-1	
3593.3	1.31	4.74	1-3	
3326.7	1.32	5.15	2-2	a^3P-b^1D (7F)
3314.5	1.31	5.15	1-2	
3307.6	1.30	5.15	0-2	
4140.4 ?	1.73	4.73	0-2?	a^1S-a^3D (8F)
4163.6 ?	1.73	4.70	0-1?	
3615.5	1.73	5.15	0-2	a^1S-b^1D (9F)
4160.9	1.78	4.74	4-3	a^1G-a^3D (10F)
4300.6	1.78	4.73	4-2	
3681.3	1.78	5.15	4-2	a^1G-b^1D (11F)
Ti VII I P 140				
4144.8	0.00	2.98	2-2	$3p^4\ ^3P$-$3p^4\ ^1D$
5104.5	0.56	2.98	1-2	(1F)
[illegible]1	2.98	6.76	2-0	$3p^4\ ^1D$-$3p^4\ ^1S$ (2F)
[illegible] VIII I P ?				
[illegible]8 ?	(0.13	2.90)	2½-1½	$3p^3\ ^2P^o$-$3p^3\ ^2P^o$
[illegible]545 ?	(0.00	2.72)	1½- ½	(1F)
4779 ?	(0.13	2.72)	2½- ½	
4363 ?	(0.00	2.90)	1½-1½	
V II I P 14.1				
11414.22	0.04	1.12	4-4	a^5D-a^3F (1F)
11580.17	0.03	1.09	3-3	
11715.20	0.01	1.07	2-2	
11757.36	0.04	1.09	4-3	
11857.28	0.03	1.07	3-2	
11246.87	0.03	1.12	3-4	
11444.61	0.01	1.09	2-3	
11619.10	0.00	1.07	1-2	
8545.12	0.03	1.47	3-2	a^5D-a^3P (2F)
8763.28	0.01	1.42	2-1	
8878.98	0.00	1.39	1-0	
8471.07	0.01	1.47	2-2	
8709.38	0.00	1.42	1-1	
8430.72	0.00	1.47	1-2	
8682.13	0.00	1.42	0-1	
7533.84	0.04	1.68	4-4	a^5D-b^3F (3F)
7497.68	0.03	1.67	3-3	
7469.44	0.01	1.67	2-2	
7571.69	0.04	1.87	4-3	
7526.94	0.03	1.67	3-2	
7460.57	0.03	1.68	3-4	
7440.62	0.01	1.87	2-3	
7430.26	0.00	1.67	1-2	
V II continued				
7459.30	0.04	1.70	4-3	a^5D-a^5P (4F)
7468.52	0.03	1.68	3-2	
7457.80	0.01	1.67	2-1	
7541.95	0.04	1.68	4-2	
7515.13	0.03	1.67	3-1	
7387.47	0.03	1.70	3-3	
7411.90	0.01	1.68	2-2	
7418.75	0.00	1.67	1-1	
7333.06	0.01	1.70	2-3	
7373.32	0.00	1.68	1-2	
7398.95	0.00	1.67	0-1	
7294.30	0.00	1.70	1-3	
7353.77	0.00	1.68	0-2	
5549.49	0.04	2.27	4-3	a^5D-a^3D (5F)
5527.92	0.03	2.26	3-2	
5504.22	0.01	2.26	2-1	
5509.63	0.03	2.27	3-3	
5496.84	0.01	2.26	2-2	
5482.91	0.00	2.26	1-1	
5478.76	0.01	2.27	2-3	
5475.59	0.00	2.26	1-2	
5472.09	0.00	2.26	0-1	
5283.88	0.03	2.36	3-2	a^5D-b^3P (6F)
5245.25	0.01	2.37	2-1	
5237.25	0.00	2.37	1-0	
5254.49	0.01	2.36	2-2	
5225.90	0.00	2.37	1-1	
5235.07	0.00	2.36	1-2	
5216.07	0.00	2.37	0-1	
4965.31	0.03	2.51	3-2	a^5D-c^3P (7F)
5002.88	0.01	2.48	2-1	
4968.65	0.00	2.49	1-0	
4940.22	0.01	2.51	2-2	
4985.27	0.00	2.48	1-1	
4923.05	0.00	2.51	1-2	
4976.33	0.00	2.48	0-1	
4928.68	0.04	2.55	4-3	a^5D-b^3D (8F)
4898.64	0.03	2.55	3-2	
4896.87	0.01	2.53	2-1	
4897.21	0.03	2.55	3-3	
4874.21	0.01	2.55	2-2	
4880.00	0.00	2.53	1-1	
4872.80	0.01	2.55	2-3	
4857.50	0.00	2.55	1-2	
4871.43	0.00	2.53	0-1	
9570.24	0.39	1.68	5-4	a^5F-b^3F (9F)
9454.15	0.37	1.67	4-3	
9358.90	0.35	1.67	3-2	
9395.23	0.37	1.68	4-4	
9313.72	0.35	1.67	3-3	
9253.44	0.33	1.67	2-2	
9256.51	0.35	1.68	3-4	
9209.25	0.33	1.67	2-3	
9183.58	0.32	1.67	1-2	
9279.59	0.37	1.70	4-3	a^5F-a^5P (10F)
9268.77	0.35	1.68	3-2	
9235.60	0.33	1.67	2-1	
9144.25	0.35	1.70	3-3	
9165.30	0.33	1.68	2-2	
9166.00	0.32	1.67	1-1	
9043.52	0.33	1.70	2-3	
9096.76	0.32	1.68	1-2	
8698.69	0.39	1.81	5-5	a^5F-a^3G (11F)
8627.35	0.37	1.80	4-4	
8579.15	0.35	1.79	3-3	
8774.69	0.39	1.80	5-4	
8698.18	0.37	1.79	4-3	
8553.87	0.37	1.81	4-5	
8510.24	0.35	1.80	3-4	
8490.44	0.33	1.79	2-3	
7477.26	0.39	2.04	5-5	a^5F-b^3G (12F)
7431.08	0.37	2.03	4-4	
7387.74	0.35	2.02	3-3	
7540.14	0.39	2.03	5-4	
7475.84	0.37	2.02	4-3	
7370.00	0.37	2.04	4-5	
7344.03	0.35	2.03	3-4	
7321.87	0.33	2.02	2-3	
6497.76	0.37	2.27	4-3	a^5F-a^3D (13F)
6456.04	0.35	2.26	3-2	
6415.69	0.33	2.26	2-1	
6431.11	0.35	2.27	3-3	
6405.67	0.33	2.26	2-2	
6382.03	0.32	2.26	1-1	
6381.13	0.33	2.27	2-3	
6372.11	0.32	2.26	1-2	
5662.62	0.37	2.55	4-3	a^5F-b^3D (14F)
5613.81	0.35	2.55	3-2	
5605.36	0.33	2.53	2-1	
5611.94	0.35	2.55	3-3	
5575.69	0.33	2.55	2-2	
5579.65	0.32	2.53	1-1	
5573.84	0.33	2.55	2-3	
5550.25	0.32	2.55	1-2	
10800.75	1.12	2.27	4-3	a^3F-a^3D (15F)
10576.98	1.09	2.26	3-2	
10382.14	1.07	2.26	2-1	
10510.25	1.09	2.27	3-3	
10355.93	1.07	2.26	2-2	
10291.94	1.07	2.27	2-3	
V II continued				
9982.17	1.12	2.36	4-4	a^3F-b^1G (16F)
9733.52	1.09	2.36	3-4	
8674.27	1.12	2.55	4-3	a^3F-b^3D (17F)
8490.18	1.09	2.55	3-2	
8413.83	1.07	2.53	2-1	
8485.90	1.09	2.55	3-3	
8347.16	1.07	2.55	2-2	
8343.02	1.07	2.55	2-3	
8235.69	1.09	2.59	3-2	a^3F-a^1D (18F)
8101.03	1.07	2.59	2-2	
6114.85	1.09	3.11	3-2	a^3F-b^1D (19F)
6040.31	1.07	3.11	2-2	
5634.78	1.12	3.31	4-3	a^3F-a^1F (20F)
5554.68	1.09	3.31	3-3	
5493.10	1.07	3.31	2-3	
11918.75	1.42	2.46	1-0	a^3P-a^1S (21F)
11852.49	1.47	2.51	2-2	a^3P-c^3P (22F)
11658.88	1.42	2.48	1-1	
12219.66	1.47	2.48	2-1	
11568.38	1.42	2.49	1-0	
11324.18	1.42	2.51	1-2	
11368.21	1.39	2.48	0-1	
11471.69	1.47	2.55	2-3	a^3P-b^3D (23F)
10983.23	1.42	2.55	1-2	
10835.22	1.39	2.53	0-1	
11479.51	1.47	2.55	2-2	
11098.96	1.42	2.53	1-1	
11606.00	1.47	2.53	2-1	
11019.11	1.47	2.59	2-2	a^3P-a^1D (24F)
10561.05	1.42	2.59	1-2	
9644.96	1.47	2.75	2-1	a^3P-a^1P (25F)
9292.19	1.42	2.75	1-1	
9106.60	1.39	2.75	0-1	
7526.46	1.47	3.11	2-2	a^3P-b^1D (26F)
7309.90	1.42	3.11	1-2	
9356.40	1.57	2.89	6-5	a^3H-a^1H (27F)
9282.92	1.56	2.89	5-5	
9217.51	1.55	2.89	4-5	
8582.52	1.67	3.11	3-2	b^3F-b^1D (28F)
8544.49	1.67	3.11	2-2	
7556.03	1.68	3.31	4-3	b^3F-a^1F (29F)
7518.35	1.67	3.31	3-3	
7489.15	1.67	3.31	2-3	
11444.66	1.81	2.89	5-5	a^3G-a^1H (30F)
11315.52	1.80	2.89	4-5	
8138.62	1.80	3.31	4-3	a^3G-a^1F (31F)
8076.58	1.79	3.31	3-3	
9595.85	2.03	3.31	4-3	b^3G-a^1F (32F)
9522.24	2.02	3.31	3-3	
V III I P 29.6				
8745.0	0.04	1.45	3½-2½	$3d^3\ ^4F$-$3d^3\ ^4P$ (1F)
8735.0	0.02	1.43	2½-1½	
8683.4	0.00	1.42	1½- ½	
8599.1	0.02	1.45	2½-2½	
8625.8	0.00	1.43	1½-1½	
8493.1	0.00	1.45	1½-2½	
8615.4	0.07	1.50	4½-4½	$3d^3\ ^4F$-$3d^3\ ^2G$ (2F)
8598.3	0.04	1.48	3½-3½	
8782.6	0.07	1.48	4½-3½	
8437.9	0.04	1.50	3½-4½	
8457.2	0.02	1.48	2½-3½	
6233.9	0.04	2.02	3½-2½	$3d^3\ ^4F$-$3d^3\ ^2D$ (3F)
6215.6	0.02	2.00	2½-1½	
6159.3	0.02	2.02	2½-2½	
6160.1	0.00	2.00	1½-1½	
6104.8	0.00	2.02	1½-2½	
6098.1	0.07	2.10	4½-5½	$3d^3\ ^4F$-$3d^3\ ^2H$ (4F)
6065.2	0.04	2.08	3½-4½	
V IV I P 48.3				
8815.9	0.04	1.44	3-2	$3d^2\ ^3F$-$3d^2\ ^1D$ (1F)
8575.4	0.00	1.44	2-2	
7611.2	0.04	1.66	3-2	$3d^2\ ^3F$-$3d^2\ ^3P$ (2F)
7551.9	0.00	1.63	2-1	
7431.2	0.00	1.66	2-2	
5448.0	0.09	2.36	4-4	$3d^2\ ^3F$-$3d^2\ ^1G$ (3F)
5326.5	0.04	2.36	3-4	
5237.7	0.00	2.36	2-4	
V VIII I P 173?				
3686	0.00	3.35	2-2	$3p^4\ ^3P$-$3p^4\ ^1D$ (1F)
4734	0.74	3.35	1-2	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Cr I I P 6.74				
4577.32	0.00	2.70	3-3	a^7S-a^5P (1F)
4575.84	0.00	2.70	3-2	
4573.93	0.00	2.70	3-1	
4149.52	0.00	2.97	3-2	a^7S-a^3P (2F)
4251.99	0.00	2.90	3-1	
4117.09	0.00	3.00	3-4	a^7S-b^5D (3F)
4113.42	0.00	3.00	3-3	
4114.10	0.00	3.00	3-2	
4116.36	0.00	3.00	3-1	
3672.37	0.00	3.36	3-2	a^7S-b^3P (4F)
3678.71	0.00	3.35	3-1	
7016.80	0.94	2.70	2-3	a^5S-a^5P (5F)
7013.33	0.94	2.70	2-2	
7008.84	0.94	2.70	2-1	
6059.21	0.94	2.97	2-2	a^5S-a^3P (6F)
6280.22	0.94	2.90	2-1	
6420.88	0.94	2.86	2-0	
5990.31	0.94	3.00	2-4	a^5S-b^5D (7F)
5982.55	0.94	3.00	2-3	
5983.99	0.94	3.00	2-2	
5988.76	0.94	3.00	2-1	
5992.15	0.94	3.00	2-0	
5093.97	0.94	3.36	2-2	a^5S-b^3P (8F)
5105.16	0.94	3.35	2-1	
5108.53	0.94	3.35	2-0	
8251.14	1.03	2.53	4-5	a^5D-a^5G (9F)
8043.80	1.00	2.53	3-4	
7938.41	0.98	2.53	2-3	
7867.83	0.96	2.53	1-2	
8183.69	1.03	2.53	4-4	
8045.57	1.00	2.53	3-3	
7940.71	0.98	2.53	2-2	
8185.52	1.03	2.53	4-3	
8047.93	1.00	2.53	3-2	
7387.23	1.03	2.70	4-3	a^5D-a^5P (10F)
7269.33	1.00	2.70	3-2	
7177.04	0.98	2.70	2-1	
7383.38	1.03	2.70	4-2	
7264.51	1.00	2.70	3-1	
7273.06	1.00	2.70	3-3	
7181.74	0.98	2.70	2-2	
7117.45	0.96	2.70	1-1	
7185.39	0.98	2.70	2-3	
7123.07	0.96	2.70	1-2	
7087.10	0.96	2.70	0-1	
7125.65	0.96	2.70	1-3	
7091.68	0.96	2.70	0-2	
6333.46	1.03	2.97	4-2	a^5D-a^3P (11F)
6484.72	1.00	2.90	3-1	
6561.75	0.98	2.86	2-0	
6249.35	1.00	2.97	3-2	
6414.93	0.98	2.90	2-1	
6511.90	0.96	2.86	1-0	
6184.51	0.98	2.97	2-2	
6367.28	0.96	2.90	1-1	
6140.20	0.96	2.97	1-2	
6342.98	0.96	2.90	0-1	
6117.60	0.96	2.97	0-2	
6258.22	1.03	3.00	4-4	a^5D-b^5D (12F)
6167.84	1.00	3.00	3-3	
6106.17	0.98	3.00	2-2	
6067.88	0.96	3.00	1-1	
6249.75	1.03	3.00	4-3	
6169.37	1.00	3.00	3-2	
6111.14	0.98	3.00	2-1	
6071.35	0.96	3.00	1-0	
6176.08	1.00	3.00	3-4	
6104.67	0.98	3.00	2-3	
6062.98	0.96	3.00	1-2	
6045.80	0.96	3.00	0-1	
6251.33	1.03	3.00	4-3	
6174.44	1.00	3.00	3-1	
6114.66	0.98	3.00	2-0	
6112.75	0.98	3.00	2-4	
6061.50	0.96	3.00	1-3	
6040.94	0.96	3.00	0-2	
5975.39	1.03	3.09	4-5	a^5D-a^3G (13F)
5949.99	1.00	3.07	3-4	
5913.34	0.98	3.07	2-3	
6026.18	1.03	3.07	4-4	
5972.59	1.00	3.07	3-3	
6043.37	1.03	3.07	4-3	
5926.18	1.03	3.11	4-4	a^5D-a^3F (14F)
5876.92	1.00	3.10	3-3	
5876.23	0.98	3.08	2-2	
5951.24	1.03	3.10	4-3	
5934.73	1.00	3.08	3-2	
5852.48	1.00	3.11	3-4	
5819.54	0.98	3.10	2-3	
5836.21	0.96	3.08	1-2	
6010.53	1.03	3.08	4-2	
5795.58	0.98	3.11	2-4	
5780.29	0.96	3.10	1-3	
5815.79	0.96	3.08	0-2	

I A	E P Low	E P High	J	Multiplet (No)
Cr I continued				
5285.34	1.03	3.36	4-2	a^5D-b^3P (15F)
5239.47	1.00	3.35	3-1	
5197.31	0.98	3.35	2-0	
5226.64	1.00	3.36	3-2	
5193.82	0.98	3.35	2-1	
5165.98	0.96	3.35	1-0	
5181.21	0.98	3.36	2-2	
5162.53	0.96	3.35	1-1	
5150.07	0.96	3.36	1-2	
5146.55	0.96	3.35	0-1	
5134.16	0.96	3.36	0-2	
5124.41	1.03	3.43	4-5	a^5D-b^3G (16F)
5098.44	1.00	3.42	3-4	
5082.54	0.98	3.41	2-3	
5154.28	1.03	3.42	4-4	
5126.25	1.00	3.41	3-3	
5182.71	1.03	3.41	4-3	
Cr II I P 16.6				
8000.12	0.00	1.54	2½-4½	a^6S-a^6D (1F)
8125.50	0.00	1.52	2½-3½	
8229.81	0.00	1.50	2½-2½	
8308.68	0.00	1.49	2½-1½	
8357.78	0.00	1.48	2½- ½	
4993.68	0.00	2.47	2½-3½	a^6S-a^4D (2F)
5049.73	0.00	2.44	2½-2½	
5092.60	0.00	2.42	2½-1½	
5119.47	0.00	2.41	2½- ½	
4581.18	0.00	2.69	2½-2½	a^6S-a^4P (3F)
4580.80	0.00	2.69	2½-1½	
4580.88	0.00	2.69	2½- ½	
3993.57	0.00	3.09	2½-3½	a^6S-b^4D (4F)
3991.47	0.00	3.09	2½-2½	
3992.08	0.00	3.09	2½-1½	
3993.29	0.00	3.09	2½- ½	
3239.07	0.00	3.81	2½-2½	a^6S-b^4P (5F)
3298.61	0.00	3.74	2½-1½	
3337.77	0.00	3.70	2½- ½	
3202.25	0.00	3.85	2½-4½	a^6S-a^4F (6F)
3207.46	0.00	3.85	2½-3½	
3212.75	0.00	3.84	2½-2½	
3216.32	0.00	3.84	2½-1½	
3188.79	0.00	3.87	2½-2½	a^6S-a^2D (7F)
3170.55	0.00	3.89	2½-1½	
3089.76	0.00	3.99	2½-3½	a^6S-a^2F (8F)
3066.29	0.00	4.02	2½-2½	
12471.70	1.54	2.53	4½-5½	a^6D-a^4G (9F)
12168.18	1.52	2.53	3½-4½	
11943.75	1.50	2.53	2½-3½	
11789.27	1.49	2.53	1½-2½	
12460.65	1.54	2.53	4½-4½	
12170.50	1.52	2.53	3½-3½	
11951.78	1.50	2.53	2½-2½	
12463.08	1.54	2.53	4½-3½	
12178.83	1.52	2.53	3½-2½	
10719.84	1.54	2.69	4½-2½	a^6D-a^4P (10F)
10500.65	1.52	2.69	3½-1½	
10331.86	1.50	2.69	2½- ½	
10502.67	1.52	2.69	3½-2½	
10331.43	1.50	2.69	2½-1½	
10210.20	1.49	2.69	1½- ½	
10333.39	1.50	2.69	2½-2½	
10209.78	1.49	2.69	1½-1½	
10137.00	1.48	2.69	½- ½	
10211.69	1.49	2.69	1½-2½	
10136.59	1.48	2.69	½-1½	
10138.47	1.48	2.69	½-2½	
7974.31	1.54	3.09	4½-3½	a^6D-b^4D (11F)
7845.41	1.52	3.09	3½-2½	
7752.86	1.50	3.09	2½-1½	
7688.64	1.49	3.09	1½- ½	
7965.96	1.54	3.09	4½-2½	
7847.76	1.52	3.09	3½-1½	
7757.43	1.50	3.09	2½- ½	
7853.51	1.52	3.09	3½-3½	
7750.56	1.50	3.09	2½-2½	
7684.16	1.49	3.09	1½-1½	
7647.06	1.48	3.09	½- ½	
7758.47	1.50	3.09	2½-3½	
7681.89	1.49	3.09	1½-2½	
7642.61	1.48	3.09	½-1½	
7689.65	1.49	3.09	1½-3½	
7640.39	1.48	3.09	½-2½	
5442.82	1.54	3.81	4½-2½	a^6D-b^4P (12F)
5552.93	1.52	3.74	3½-1½	
5615.19	1.50	3.70	2½- ½	
5386.27	1.52	3.81	3½-2½	
5505.25	1.50	3.74	2½-1½	
5579.06	1.49	3.70	1½- ½	
5341.39	1.50	3.81	2½-2½	
5470.51	1.49	3.74	1½-1½	
5557.14	1.48	3.70	½- ½	
5308.68	1.49	3.81	1½-2½	
5449.43	1.48	3.74	½-1½	
5288.83	1.48	3.81	½-2½	

I A	E P Low	E P High	J	Multiplet (No)
Cr II continued				
5339.65	1.54	3.85	4½-4½	a^6D-a^4F (13F)
5299.42	1.52	3.85	3½-3½	
5270.19	1.50	3.84	2½-2½	
5247.84	1.49	3.84	1½-1½	
5354.15	1.54	3.85	4½-3½	
5313.88	1.52	3.84	3½-2½	
5279.80	1.50	3.84	2½-1½	
5285.21	1.52	3.85	3½-4½	
5255.97	1.50	3.85	2½-3½	
5238.35	1.49	3.84	1½-2½	
5228.44	1.48	3.84	½-1½	
5368.91	1.54	3.84	4½-2½	
5323.64	1.52	3.84	3½-1½	
5242.00	1.50	3.85	2½-4½	
5224.30	1.49	3.85	1½-3½	
5219.02	1.48	3.84	½-2½	
5248.64	1.52	3.87	3½-2½	a^6D-a^2D (14F)
5157.59	1.50	3.89	2½-1½	
5206.02	1.50	3.87	2½-2½	
5127.09	1.49	3.89	1½-1½	
5174.95	1.49	3.87	1½-2½	
5108.57	1.48	3.89	½-1½	
5034.05	1.54	3.99	4½-3½	a^6D-a^2F (15F)
4924.81	1.52	4.02	3½-2½	
4985.64	1.52	3.99	3½-3½	
4887.27	1.50	4.02	2½-2½	
4947.17	1.50	3.99	2½-3½	
4859.87	1.49	4.02	1½-2½	
9222.25	2.47	3.81	3½-2½	a^4D-b^4P (16F)
9512.58	2.44	3.74	2½-1½	
9686.70	2.42	3.70	1½- ½	
9033.73	2.44	3.81	2½-2½	
9364.08	2.42	3.74	1½-1½	
9590.94	2.41	3.70	½- ½	
8899.71	2.42	3.81	1½-2½	
9274.58	2.41	3.74	½-1½	
9806.20	2.47	3.73	3½-4½	a^4D-a^4H (17F)
9651.02	2.44	3.72	2½-3½	
9866.49	2.47	3.72	3½-3½	
8929.91	2.47	3.85	3½-4½	a^4D-a^4F (18F)
8792.09	2.44	3.85	2½-3½	
8703.79	2.42	3.84	1½-2½	
8652.17	2.41	3.84	½-1½	
8970.56	2.47	3.85	3½-3½	
8831.94	2.44	3.84	2½-2½	
8730.02	2.42	3.84	1½-1½	
9013.04	2.47	3.84	3½-2½	
8858.94	2.44	3.84	2½-1½	
8826.02	2.47	3.87	3½-2½	a^4D-a^2D (19F)
8520.22	2.44	3.89	2½-1½	
8653.20	2.44	3.87	2½-2½	
8400.89	2.42	3.89	1½-1½	
8530.15	2.42	3.87	1½-2½	
8328.78	2.41	3.89	½-1½	
8106.88	2.47	3.99	3½-3½	a^4D-a^2F (20F)
7806.88	2.44	4.02	2½-2½	
7947.28	2.47	4.02	3½-2½	
7960.85	2.44	3.99	2½-3½	
7706.58	2.42	4.02	1½-2½	
10373.30	2.53	3.72	5½-6½	a^4G-a^2I (21F)
10388.07	2.53	3.72	4½-5½	
10380.40	2.53	3.72	5½-5½	
10119.57	2.53	3.75	5½-6½	a^4G-a^4H (22F)
10223.27	2.53	3.74	4½-5½	
10305.67	2.53	3.73	3½-4½	
10366.26	2.53	3.72	2½-3½	
10215.85	2.53	3.74	5½-5½	
10307.34	2.53	3.73	4½-4½	
10373.30	2.53	3.72	3½-3½	
10299.79	2.53	3.73	5½-4½	
10373.98	2.53	3.72	4½-3½	
9337.40	2.53	3.85	5½-4½	a^4G-a^4F (23F)
9388.13	2.53	3.85	4½-3½	
9432.18	2.53	3.84	3½-2½	
9457.95	2.53	3.84	2½-1½	
9343.61	2.53	3.85	4½-4½	
9386.74	2.53	3.85	3½-3½	
9427.18	2.53	3.84	2½-2½	
9342.24	2.53	3.85	3½-4½	
9381.78	2.53	3.85	2½-3½	
9228.60	2.53	3.87	3½-2½	a^4G-a^2D (24F)
9072.86	2.53	3.89	2½-1½	
9223.81	2.53	3.87	2½-2½	
8446.39	2.53	3.99	4½-3½	a^4G-a^2F (25F)
8272.21	2.53	4.02	3½-2½	
8445.28	2.53	3.99	3½-3½	
8268.36	2.53	4.02	2½-2½	
8441.27	2.53	3.99	2½-3½	
11056.70	2.69	3.81	2½-2½	a^4P-b^4P (26F)
11785.17	2.69	3.74	1½-1½	
12300.16	2.69	3.70	½- ½	
11783.63	2.69	3.74	2½-1½	
12300.77	2.69	3.70	1½- ½	
11058.94	2.69	3.81	1½-2½	
11784.62	2.69	3.74	½-1½	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Cr II continued				
10696.87	2.69	3.85	2½-3½	a^4P-a^4F (27F)
10758.04	2.69	3.84	1½-2½	
10797.66	2.69	3.84	½-1½	
10755.91	2.69	3.84	2½-2½	
10798.14	2.69	3.84	1½-1½	
10796.00	2.69	3.84	2½-1½	
10491.99	2.69	3.87	2½-2½	a^4P-a^2D (28F)
10299.05	2.69	3.89	1½-1½	
10297.11	2.69	3.89	2½-1½	
10494.00	2.69	3.87	1½-2½	
10298.63	2.69	3.89	½-1½	
9491.15	2.69	3.99	2½-3½	a^4P-a^2F (29F)
9274.68	2.69	4.02	1½-2½	
9273.10	2.69	4.02	2½-2½	
Cr III I P 31				
5785.4	0.07	2.20	4-2	$3d^4\ ^5D-3d^4\ ^3P$ (1F)
5945.1	0.04	2.12	3-1	
5712.7	0.04	2.20	3-2	
5884.9	0.02	2.12	2-1	
5689.3	0.02	2.20	2-2	
5843.6	0.01	2.12	1-1	
5618.9	0.01	2.20	1-2	
5823.2	0.00	2.12	0-1	
5600.1	0.00	2.20	0-2	
5550.3	0.07	2.29	4-4	$3d^4\ ^5D-3d^4\ ^3F$ (2F)
5505.1	0.04	2.29	3-3	
5471.3	0.02	2.28	2-2	
5572.6	0.07	2.29	4-3	
5523.3	0.04	2.28	3-2	
5483.3	0.04	2.29	3-4	
5453.4	0.02	2.29	2-3	
5435.6	0.01	2.28	1-2	
5591.3	0.07	2.28	4-2	
5432.1	0.02	2.29	2-4	
•5418.0	(0.01	2.29	1-3	
	0.00	2.28	0-2	
4894.1	0.07	2.59	4-5	$3d^4\ ^5D-3d^4\ ^3G$ (3F)
4876.0	0.04	2.57	3-4	
4870.8	0.02	2.56	2-3	
4928.9	0.07	2.57	4-4	
4911.9	0.04	2.56	3-3	
•4842.4	0.04	2.59	3-5	
4835.4	0.02	2.57	2-4	
•4842.4	0.01	2.56	1-3	
4965.6	0.07	2.56	4-3	
Cr IV I P 50.4				
7390.6	0.12	1.79	4½-2½	$3d^3\ ^4F-3d^3\ ^4P$ (1F)
7338.0	0.07	1.75	3½-1½	
7333.4	0.03	1.74	2½- ½	
7180.4	0.07	1.79	3½-2½	
7171.6	0.03	1.75	2½-1½	
7111.4	0.00	1.74	1½- ½	
7021.0	0.03	1.79	2½-2½	
7051.7	0.00	1.75	1½-1½	
8906.1	0.00	1.79	1½-2½	
6915.6	0.12	1.90	4½-4½	$3d^3\ ^4F-3d^3\ ^2G$ (2F)
6893.2	0.07	1.86	3½-3½	
7086.7	0.12	1.88	4½-3½	
6731.2	0.07	1.90	3½-4½	
6746.2	0.03	1.86	2½-3½	
6591.0	0.03	1.90	2½-4½	
6640.0	0.00	1.86	1½-3½	
5296.3	0.07	2.40	3½-1½	$3d^3\ ^4F-3d^3\ ^2P$ (3F)
5209.1	0.03	2.40	2½-1½	
5145.5	0.00	2.40	1½-1½	
5071.8	0.12	2.55	4½-2½	$3d^3\ ^4F-3d^3\ ^2D$ (4F)
4976.5	0.07	2.55	3½-1½	
4971.8	0.07	2.55	3½-2½	
4899.4	0.03	2.55	2½-1½	
4894.8	0.03	2.55	2½-2½	
4843.1	0.00	2.55	1½-1½	
4838.7	0.00	2.55	1½-2½	
4907.6	0.12	2.63	4½-5½	$3d^3\ ^4F-3d^3\ ^2H$ (5F)
4873.4	0.07	2.60	3½-4½	
4969.3	0.12	2.60	4½-4½	
4814.0	0.07	2.63	3½-5½	
4799.4	0.03	2.60	2½-4½	
Cr V I P 72.8				
7252.8	0.14	1.84	4-2	$3d^2\ ^3F-3d^2\ ^1D$ (1F)
6932.4	0.06	1.84	3-2	
8700.1	0.00	1.84	2-3	
6705.5	0.14	1.98	4-2	$3d^2\ ^3F-3d^2\ ^3P$ (2F)
6588.7	0.06	1.94	3-1	
8482.3	0.00	1.91	2-0	
8430.7	0.06	1.98	3-2	
6376.6	0.00	1.94	2-1	
6230.4	0.00	1.98	2-2	
4523.6	0.14	2.87	4-4	$3d^2\ ^3F-3d^2\ ^1G$ (3F)
4396.9	0.06	2.87	3-4	
4302.3	0.00	2.87	2-4	
Cr V continued				
9635.9	1.84	3.12	2-0	$3d^2\ ^1D-3d^2\ ^1S$ (4F)
10807.8	1.98	3.12	2-0	$3d^2\ ^3P-3d^2\ ^1S$
10394.3	1.94	3.12	1-0	(5F)
Cr VIII I P 184?				
10098.2	0.00	1.22	1½- ½	$3p^5\ ^2P°-3p^5\ ^2P°$ (1F)
Cr IX I P 209?				
3273.5	0.00	3.77	2-2	$3p^4\ ^3P-3p^4\ ^1D$
4407.9	0.97	3.77	1-2	(1F)
Mn II I P 15.57				
10553.58	0.00	1.17	3-2	a^7S-a^5S (1F)
6978.57	0.00	1.77	3-4	a^7S-a^5D
6850.42	0.00	1.80	3-3	(2F)
6763.56	0.00	1.82	3-2	
6709.08	0.00	1.84	3-1	
3344.72	0.00	3.69	3-3	a^7S-a^5P
3341.38	0.00	3.69	3-2	(3F)
3337.82	0.00	3.70	3-1	
3049.05	0.00	4.05	3-4	a^7S-b^5D
3042.61	0.00	4.06	3-3	(4F)
3042.44	0.00	4.06	3-2	
3044.52	0.00	4.05	3-1	
4896.65	1.17	3.69	2-3	a^5S-a^5P
4889.49	1.17	3.69	2-2	(5F)
4881.87	1.17	3.70	2-1	
4275.21	1.17	4.06	2-3	a^5S-b^5D
4274.87	1.17	4.06	2-2	(6F)
4278.97	1.17	4.05	2-1	
7547.77	1.77	3.40	4-5	a^5D-a^5G
7696.30	1.80	3.41	3-4	(7F)
7805.96	1.82	3.41	2-3	
7879.33	1.84	3.41	1-2	
7540.74	1.77	3.41	4-4	
7693.38	1.80	3.41	3-3	
7805.47	1.82	3.41	2-2	
7537.93	1.77	3.41	4-3	
7692.91	1.80	3.41	3-2	
6423.45	1.77	3.69	4-3	a^5D-a^5P
6523.23	1.80	3.69	3-2	(8F)
6590.10	1.82	3.70	2-1	
6535.99	1.80	3.69	3-3	
6603.99	1.82	3.69	2-2	
6642.66	1.84	3.70	1-1	
6617.06	1.82	3.69	2-3	
6656.77	1.84	3.69	1-2	
6668.63	1.85	3.70	0-1	
5415.04	1.77	4.05	4-4	a^5D-b^5D
5473.94	1.80	4.06	3-3	(9F)
5530.11	1.82	4.06	2-2	
5574.04	1.84	4.05	1-1	
5394.78	1.77	4.06	4-3	
5473.37	1.80	4.06	3-2	
5536.98	1.82	4.05	2-1	
5579.73	1.84	4.05	1-0	
5494.80	1.80	4.05	3-4	
5530.69	1.82	4.06	2-3	
5567.08	1.84	4.06	1-2	
5561.21	1.85	4.05	0-1	
Mn IV I P 52				
4662.7	0.11	2.76	4-2	$3d^4\ ^5D-3d^4\ ^3P$ (1F)
4823.3	0.07	2.63	3-1	
4908.8	0.03	2.55	2-0	
4591.4	0.07	2.76	3-2	
4781.9	0.03	2.63	2-1	
4863.9	0.01	2.55	1-0	
4535.7	0.03	2.78	2-2	
4719.7	0.01	2.83	1-1	
4497.4	0.01	2.78	1-2	
4699.3	0.00	2.83	0-1	
4478.8	0.00	2.78	0-2	
4528.3	0.11	2.83	4-4	$3d^4\ ^5D-3d^4\ ^3F$ (2F)
4480.8	0.07	2.82	3-3	
4442.0	0.03	2.81	2-2	
4548.5	0.11	2.82	4-3	
4495.3	0.07	2.81	3-2	
4461.0	0.07	2.83	3-4	
4427.7	0.03	2.82	2-3	
4405.2	0.01	2.81	1-2	
4563.7	0.11	2.81	4-2	
4408.5	0.03	2.83	2-4	
4391.1	0.01	2.82	1-3	
4387.4	0.00	2.81	0-2	
Mn V I P 75.7				
6396.2	0.17	2.10	4½-2½	$3d^3\ ^4F-3d^3\ ^4P$ (1F)
6346.2	0.10	2.05	3½-1½	
6220.7	0.04	2.03	2½- ½	
6167.7	0.10	2.10	3½-2½	
6159.3	0.04	2.05	2½-1½	
6088.5	0.00	2.03	1½- ½	
5991.0	0.04	2.10	2½-2½	
6029.7	0.00	2.05	1½-1½	
5868.3	0.00	2.10	1½-2½	
5889.0	0.17	2.27	4½-4½	$3d^3\ ^4F-3d^3\ ^2G$ (2F)
5863.1	0.10	2.21	3½-3½	
6069.2	0.17	2.21	4½-3½	
5694.8	0.10	2.27	3½-4½	
5703.3	0.04	2.21	2½-3½	
5543.9	0.04	2.27	2½-4½	
5591.9	0.00	2.21	1½-3½	
4528.7	0.10	2.83	3½-1½	$3d^3\ ^4F-3d^3\ ^2P$ (3F)
4398.4	0.04	2.85	2½- ½	
4432.8	0.04	2.83	2½-1½	
4331.9	0.00	2.85	1½- ½	
4365.2	0.00	2.83	1½-1½	
4308.4	0.17	3.04	4½-2½	$3d^3\ ^4F-3d^3\ ^2D$ (4F)
4196.3	0.10	3.04	3½-1½	
4203.5	0.10	3.04	3½-2½	
4113.7	0.04	3.04	2½-1½	
4120.7	0.04	3.04	2½-2½	
4055.5	0.00	3.04	1½-1½	
4063.2	0.00	3.04	1½-2½	
Mn VI I P ?				
6277.3	0.21	2.17	4-2	$3d^2\ ^3F-3d^2\ ^1D$ (1F)
5933.4	0.09	2.17	3-2	
5679.3	0.00	2.17	2-2	
5907.1	0.21	2.30	4-2	$3d^2\ ^3F-3d^2\ ^3P$ (2F)
5783.4	0.09	2.23	3-1	
5625.0	0.00	2.19	2-0	
5601.6	0.09	2.30	3-2	
5541.7	0.00	2.23	2-1	
5374.6	0.00	2.30	2-2	
3866.9	0.21	3.40	4-4?	$3d^2\ ^3F-3d^2\ ^1G$? (3F)
3733.6	0.09	3.40	3-4?	
3631.4	0.00	3.40	2-4?	
Mn IX I P 221?				
7978.7	0.00	1.55	1½- ½	$3p^5\ ^2P°-3p^5\ ^2P°$ (1F)
Mn X I P 247?				
9997.3	0.00	1.23	2-1	$3p^4\ ^3P-3p^4\ ^3P$ (1F)
4122.6	1.23	4.23	1-2	$3p^4\ ^3P-3p^4\ ^1D$ (2F)
Fe I I P 7.858				
8347.55	0.00	1.48	4-4	a^5D-a^3F (1F)
8231.57	0.05	1.55	3-3	
8151.33	0.09	1.60	2-2	
7959.00	0.00	1.55	4-3	
7964.27	0.05	1.60	3-2	
8647.89	0.05	1.48	3-4	
8431.56	0.09	1.55	2-3	
8275.57	0.11	1.60	1-2	
7708.83	0.00	1.60	4-2	
8868.91	0.09	1.48	2-4	
8564.56	0.11	1.55	1-3	
8337.65	0.12	1.60	0-2	
5696.36	0.00	2.17	4-3	a^5D-a^5P (2F)
5775.05	0.05	2.19	3-2	
5804.45	0.09	2.21	2-1	
5639.55	0.00	2.19	4-2	
5708.96	0.05	2.21	3-1	
5834.64	0.05	2.17	3-3	
5872.77	0.09	2.19	2-2	
5867.17	0.11	2.21	1-1	
5934.41	0.09	2.17	2-3	
5936.99	0.11	2.19	1-2	
5898.30	0.12	2.21	0-1	
5999.99	0.11	2.17	1-3	
5968.87	0.12	2.19	0-2	
5439.72	0.00	2.27	4-2	a^5D-a^3P (3F)
5224.15	0.05	2.41	3-1	
5170.84	0.09	2.47	2-0	
5565.68	0.05	2.27	3-2	
5303.99	0.09	2.41	2-1	
5220.56	0.11	2.47	1-0	
5656.39	0.09	2.27	2-2	
5356.32	0.11	2.41	1-1	
5715.94	0.11	2.27	1-2	
5382.26	0.12	2.41	0-1	
5745.49	0.12	2.27	0-2	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Fe I continued				
4843.34	0.00	2.55	4-4	a^5D-b^3F (4F)
4886.56	0.05	2.58	3-3	
4916.26	0.09	2.60	2-2	
4789.19	0.00	2.58	4-3	
4847.58	0.05	2.60	3-2	
4942.95	0.05	2.55	3-4	
4956.35	0.09	2.58	2-3	
4961.18	0.11	2.60	1-2	
4751.75	0.00	2.60	4-2	
5014.37	0.09	2.55	2-4	
5002.01	0.11	2.58	1-3	
4983.42	0.12	2.60	0-2	
4603.66	0.00	2.68	4-5	a^5D-a^3G (5F)
4631.93	0.05	2.72	3-4	
4640.05	0.09	2.75	2-3	
4544.36	0.00	2.72	4-4	
4578.83	0.05	2.75	3-3	
4693.56	0.05	2.68	3-5	
4694.59	0.09	2.72	2-4	
4680.05	0.11	2.75	1-3	
4493.23	0.00	2.75	4-3	
4377.37	0.00	2.82	4-3	a^5D-b^3P (6F)
4437.10	0.05	2.83	3-1	
4473.46	0.09	2.85	2-0	
4458.57	0.05	2.82	3-2	
4494.57	0.09	2.83	2-1	
4510.63	0.11	2.85	1-0	
4516.60	0.09	2.82	2-2	
4532.09	0.11	2.83	1-1	
4554.49	0.11	2.82	1-2	
4550.64	0.12	2.83	0-1	
4573.23	0.12	2.82	0-2	
4303.39	0.00	2.94	4-5	a^5D-b^3G (7F)
4317.71	0.05	2.98	3-4	
4329.86	0.09	3.00	2-3	
4144.97	0.00	2.98	4-4	
4178.93	0.05	3.00	3-3	
4278.21	0.05	2.94	3-5	
4269.60	0.09	2.98	2-4	
4263.07	0.11	3.00	1-3	
4107.51	0.00	3.00	4-3	
4108.02	0.00	3.00	4-2	a^5D-c^3P (8F)
4104.59	0.05	3.06	3-1	
4099.29	0.09	3.10	2-0	
4179.45	0.05	3.00	3-2	
4153.72	0.09	3.06	2-1	
4130.47	0.11	3.10	1-0	
4230.40	0.09	3.00	2-2	
4185.74	0.11	3.06	1-1	
4263.62	0.11	3.00	1-2	
4201.56	0.12	3.06	0-1	
4280.04	0.12	3.00	0-2	
3812.07	0.00	3.24	4-3	a^5D-a^3D (9F)
3814.58	0.05	3.29	3-2	
3889.58	0.09	3.26	2-1	
3754.98	0.00	3.29	4-2	
3846.46	0.05	3.26	3-1	
3873.51	0.05	3.24	3-3	
3856.98	0.09	3.29	2-2	
3917.64	0.11	3.26	1-1	
3917.23	0.09	3.24	2-3	
3884.57	0.11	3.29	1-2	
3931.50	0.12	3.26	0-1	
3945.70	0.11	3.24	1-3	
3898.19	0.12	3.29	0-2	
3403.65	0.00	3.63	4-3	a^5D-b^3D (10F)
3454.34	0.05	3.68	3-3	
3493.55	0.09	3.68	2-1	
3405.39	0.00	3.68	4-2	
3458.73	0.05	3.68	3-1	
3452.54	0.05	3.63	3-3	
3489.07	0.09	3.68	2-2	
3516.17	0.11	3.68	1-1	
3487.23	0.09	3.63	2-3	
3511.64	0.11	3.68	1-2	
3527.33	0.12	3.68	0-1	
3509.78	0.11	3.63	1-3	
3522.76	0.12	3.68	0-2	
9826.83	0.91	2.17	4-3	a^5F-a^5P (11F)
9998.31	0.95	2.19	3-2	
10055.97	0.99	2.21	2-1	
10178.29	0.95	2.17	3-3	
10262.84	0.99	2.19	2-2	
10329.79	1.01	2.21	1-1	
10452.56	0.99	2.17	2-3	
10443.95	1.01	2.19	1-2	
9386.96	0.95	2.27	3-2	a^5F-a^3P (12F)
8643.14	0.99	2.41	2-1	
8412.97	1.01	2.47	1-0	
9619.74	0.99	2.27	2-2	
8771.24	1.01	2.41	1-1	
9778.70	1.01	2.27	1-2	

I A	E P Low	E P High	J	Multiplet (No)
Fe I continued				
8022.25	0.86	2.39	5-6	a^5F-a^3H (13F)
8164.85	0.91	2.42	4-5	
8289.45	0.95	2.44	3-4	
7876.34	0.86	2.42	5-5	
8054.83	0.91	2.44	4-4	
7773.91	0.86	2.44	5-4	
7890.42	0.86	2.55	5-4	a^5F-b^3F (14F)
7406.61	0.91	2.58	4-3	
7510.54	0.95	2.60	3-2	
7168.42	0.86	2.58	5-3	
7317.43	0.91	2.60	4-2	
7536.93	0.91	2.55	4-4	
7604.53	0.95	2.58	3-3	
7658.84	0.99	2.60	2-2	
7741.96	0.95	2.55	3-4	
7756.59	0.99	2.58	2-3	
7759.25	1.01	2.60	1-2	
7899.63	0.99	2.55	2-4	
7859.60	1.01	2.58	1-3	
6760.61	0.86	2.68	5-5	a^5F-a^3G (15F)
6836.94	0.91	2.72	4-4	
6884.50	0.95	2.75	3-3	
6633.48	0.86	2.72	5-4	
6721.89	0.91	2.75	4-3	
6972.07	0.91	2.68	4-5	
7005.23	0.95	2.72	3-4	
7008.89	0.99	2.75	2-3	
6525.11	0.86	2.75	5-3	
7147.16	0.95	2.68	3-5	
7134.08	0.99	2.72	2-4	
7092.89	1.01	2.75	1-3	
6616.18	0.95	2.82	3-2	a^5F-b^3P (16F)
6682.18	0.99	2.83	2-1	
6710.88	1.01	2.85	1-0	
6730.99	0.99	2.82	2-2	
6758.48	1.01	2.83	1-1	
6808.42	1.01	2.82	1-2	
5931.19	0.86	2.94	5-5	a^5F-b^3G (17F)
5971.33	0.91	2.98	4-4	
6018.54	0.95	3.00	3-3	
5815.53	0.86	2.98	5-4	
5893.89	0.91	3.00	4-3	
6093.32	0.91	2.94	4-5	
6099.31	0.95	2.98	3-4	
6113.40	0.99	3.00	2-3	
5742.07	0.86	3.00	5-3	
6226.64	0.95	2.94	3-5	
6196.75	0.99	2.98	2-4	
6177.21	1.01	3.00	1-3	
6019.63	0.95	3.00	3-2	a^5F-c^3P (18F)
5955.61	0.99	3.06	2-1	
5902.64	1.01	3.10	1-0	
6114.52	0.99	3.00	2-2	
6016.15	1.01	3.06	1-1	
6178.35	1.01	3.00	1-2	
5212.95	0.86	3.22	5-6	a^5F-b^3H (19F)
5268.82	0.91	3.25	4-5	
5289.66	0.95	3.29	3-4	
5147.16	0.86	3.25	5-5	
5193.13	0.91	3.29	4-4	
5074.90	0.86	3.29	5-4	
5180.78	0.86	3.24	5-3	a^5F-a^3D (20F)
5194.19	0.91	3.29	4-2	
5352.29	0.95	3.26	3-1	
5304.06	0.91	3.24	4-3	
5290.75	0.95	3.29	3-2	
5427.17	0.99	3.26	2-1	
5404.80	0.95	3.24	3-3	
5363.91	0.99	3.29	2-2	
5477.40	1.01	3.26	1-1	
5481.17	0.99	3.24	2-3	
5412.97	1.01	3.29	1-2	
5532.41	1.01	3.24	1-3	
4454.37	0.86	3.63	5-3	a^5F-b^3D (21F)
4548.32	0.91	3.68	4-3	
4630.06	0.95	3.68	3-1	
4545.30	0.91	3.63	4-3	
4622.19	0.95	3.68	3-2	
4685.99	0.99	3.68	2-1	
4618.97	0.95	3.63	3-3	
4677.94	0.99	3.68	2-2	
4723.39	1.01	3.68	1-1	
4674.64	0.99	3.63	2-3	
4715.21	1.01	3.68	1-2	
4711.86	1.01	3.63	1-3	
11537.68	1.48	2.55	4-4	a^3F-b^3F (22F)
12025.23	1.55	2.58	3-3	
12387.48	1.60	2.60	2-2	
11233.80	1.48	2.58	4-3	
11791.90	1.55	2.60	3-2	
12372.55	1.55	2.55	3-4	
12645.23	1.60	2.58	2-3	

I A	E P Low	E P High	J	Multiplet (No)
Fe I continued				
10264.65	1.48	2.68	4-5	a^3F-a^3G (23F)
10592.32	1.55	2.72	3-4	
10771.88	1.60	2.75	2-3	
9974.41	1.48	2.72	4-4	
10318.68	1.55	2.75	3-3	
9731.40	1.48	2.75	4-3	
8466.95	1.48	2.94	4-5	a^3F-b^3G (24F)
8649.72	1.55	2.98	3-4	
8792.49	1.60	3.00	2-3	
8233.22	1.48	2.98	4-4	
8488.19	1.55	3.00	3-3	
8086.73	1.48	3.00	4-3	
8490.34	1.55	3.00	3-2	a^3F-c^3P (25F)
8469.75	1.60	3.06	2-1	
8794.80	1.60	3.00	2-2	
7935.32	1.48	3.03	4-4	a^3F-a^1G (26F)
8321.51	1.55	3.03	3-4	
6954.69	1.48	3.25	4-5	a^3F-b^3H (27F)
7107.04	1.55	3.29	3-4	
6823.42	1.48	3.29	4-4	
7016.31	1.48	3.24	4-3	a^3F-a^3D (28F)
7109.01	1.55	3.29	3-2	
7439.58	1.60	3.26	2-1	
7316.44	1.55	3.24	3-3	
7321.23	1.60	3.29	2-2	
7541.42	1.60	3.24	2-3	
6231.27	1.55	3.53	3-2	a^3F-a^1D (29F)
6393.72	1.60	3.53	2-2	
5746.99	1.48	3.63	4-3	a^3F-b^3D (30F)
5952.31	1.55	3.62	3-2	
6113.97	1.60	3.62	2-1	
5946.87	1.55	3.63	3-3	
6100.26	1.60	3.62	2-2	
6094.65	1.60	3.63	2-3	
5609.27	1.48	3.68	4-4	a^3F-b^1G (31F)
5799.53	1.55	3.68	3-4	
11524.46	2.17	3.24	3-3	a^5P-a^3D (32F)
11237.04	2.19	3.29	2-2	
11790.50	2.21	3.26	1-1	
11018.07	2.17	3.29	3-2	
11518.28	2.19	3.26	2-1	
11764.23	2.19	3.24	2-3	
11495.96	2.21	3.29	1-2	
8456.74	2.17	3.63	3-3	a^5P-b^3D (33F)
8596.27	2.19	3.62	2-2	
8775.19	2.21	3.62	1-1	
8467.54	2.17	3.62	3-2	
8623.51	2.19	3.62	2-1	
8585.14	2.19	3.63	2-3	
8746.99	2.21	3.62	1-2	
10908.34	2.27	3.40	2-1	a^3P-a^1P (34F)
9775.94	2.27	3.53	2-2	a^3P-a^1D (35F)
11044.11	2.41	3.53	1-2	
9093.67	2.27	3.63	2-3	a^3P-b^3D (36F)
10196.82	2.41	3.62	1-2	
10770.38	2.47	3.62	0-1	
9106.17	2.27	3.62	2-2	
10235.17	2.41	3.62	1-1	
9136.73	2.27	3.62	2-1	
10601.80	2.39	3.56	6-5	a^3H-a^1H (37F)
10867.84	2.42	3.56	5-5	
11069.08	2.44	3.56	4-5	
10075.00	2.39	3.62	6-6	a^3H-a^1I (38F)
10314.96	2.42	3.62	5-6	
9822.50	2.42	3.68	5-4	a^3H-b^1G (39F)
9986.60	2.44	3.68	4-4	
11450.66	2.55	3.63	4-3	b^3F-b^3D (40F)
11786.08	2.58	3.62	3-2	
12072.48	2.60	3.62	2-1	
11765.16	2.58	3.63	3-3	
12019.17	2.60	3.62	2-2	
11997.42	2.60	3.63	2-3	
10916.64	2.55	3.68	4-4	b^3F-b^1G (41F)
11202.11	2.58	3.68	3-4	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
[illegible] I P 16.16				
[illegible].42	0.00	1.66	4½-3½	a^8D-a^4P (1F)
[illegible].27	0.05	1.89	3½-2½	
[illegible].38	0.08	1.72	2½- ½	
[illegible]72	0.05	1.66	3½-2½	
[illegible]00	0.08	1.69	2½-1½	
[illegible].39	0.11	1.72	1½- ½	
[illegible]28	0.08	1.88	2½-2½	
[illegible]00	0.11	1.69	1½-1½	
[illegible]	0.12	1.72	½- ½	
[illegible]	0.11	1.86	1½-2½	
[illegible]5	0.12	1.69	½-1½	
[illegible].47	0.12	1.68	½-2½	
5650.39	0.08	2.27	2½-1½	a^6D-a^2P (2F)
5546.59	0.11	2.33	1½- ½	
5713.35	0.11	2.27	1½-1½	
5582.01	0.12	2.33	½- ½	
[illegible]0.95	0.12	2.27	½-1½	
[illegible]65.78	0.05	2.53	3½-2½	a^8D-a^2D (3F)
4843.51	0.08	2.63	2½-1½	
5038.55	0.08	2.53	2½-2½	
4889.70	0.11	2.63	1½-1½	
5088.52	0.11	2.53	1½-2½	
4917.32	0.12	2.63	½-1½	
[illegible]9.31	0.00	2.57	4½-3½	a^6D-b^4P (4F)
5.65	0.05	2.89	3½-1½	
[illegible]98.07	0.08	2.77	2½- ½	
4889.63	0.05	2.57	3½-2½	
4728.07	0.08	2.69	2½-1½	
4639.68	0.11	2.77	1½- ½	
4958.23	0.08	2.57	2½-2½	
4772.07	0.11	2.69	1½-1½	
4664.45	0.12	2.77	½- ½	
5006.65	0.11	2.57	1½-2½	
4798.28	0.12	2.69	½-1½	
5035.50	0.12	2.57	½-2½	
4664.97	0.00	2.85	4½-5½	a^6D-a^4H (5F)
4716.36	0.05	2.66	3½-4½	
4750.57	0.08	2.68	2½-3½	
4632.37	0.00	2.86	4½-4½	
4687.56	0.05	2.68	3½-3½	
4604.48	0.00	2.68	4½-3½	
4416.37	0.00	2.79	4½-4½	a^8D-b^4F (6F)
4457.95	0.05	2.82	3½-3½	
4488.75	0.08	2.83	2½-2½	
4509.61	0.11	2.84	1½-1½	
4382.75	0.00	2.82	4½-3½	
4432.45	0.05	2.83	3½-2½	
4470.29	0.08	2.84	2½-1½	
4492.84	0.05	2.79	3½-4½	
4514.90	0.08	2.82	2½-3½	
4528.39	0.11	2.83	1½-2½	
4533.00	0.12	2.84	½-1½	
4358.10	0.00	2.83	4½-3½	
4414.45	0.05	2.84	3½-1½	
4550.48	0.08	2.79	2½-4½	
4555.01	0.11	2.82	1½-3½	
4551.98	0.12	2.83	½-2½	
4287.40	0.00	2.88	4½-2½	a^6D-a^8S (7F)
4359.34	0.05	2.88	3½-2½	
4413.78	0.08	2.88	2½-2½	
4452.11	0.11	2.88	1½-2½	
4474.91	0.12	2.88	½-2½	
3931.44	0.00	3.14	4½-5½	a^6D-a^4G (8F)
3933.73	0.05	3.19	3½-4½	
3949.27	0.08	3.21	2½-3½	
3968.27	0.11	3.22	1½-2½	
3874.07	0.00	3.19	4½-4½	
3905.63	0.05	3.21	3½-3½	
3937.80	0.08	3.22	2½-2½	
3847.78	0.00	3.21	4½-3½	
3894.40	0.05	3.22	3½-2½	
3836.89	0.00	3.22	4½-2½	
3991.84	0.05	3.14	3½-5½	
3976.97	0.08	3.19	2½-4½	
3979.93	0.11	3.21	1½-3½	
3986.38	0.12	3.22	½-2½	
3979.78	0.08	3.18	2½-1½	a^8D-b^2P (9F)
3834.73	0.11	3.32	1½- ½	
4010.91	0.11	3.18	1½-1½	
3851.63	0.12	3.32	½- ½	
4029.41	0.12	3.18	½-1½	
3659.98	0.00	3.37	4½-3½	a^6D-a^2F (10F)
3870.62	0.05	3.41	3½-2½	
3712.28	0.05	3.37	3½-3½	
3709.14	0.08	3.41	2½-2½	
3751.86	0.08	3.37	2½-3½	
3738.17	0.11	3.41	1½-2½	
3175.38	0.00	3.89	4½-3½	a^6D-b^4D (11F)
3224.54	0.05	3.87	3½-2½	
3256.73	0.08	3.87	2½-1½	
3277.12	0.11	3.87	1½- ½	
3185.01	0.00	3.87	4½-3½	
3228.99	0.05	3.87	3½-1½	
3256.31	0.08	3.87	2½- ½	
3214.87	0.05	3.89	3½-3½	
3254.24	0.08	3.87	2½-2½	
3277.55	0.11	3.87	1½-1½	
3289.46	0.12	3.87	½- ½	
3244.18	0.08	3.89	2½-3½	
3275.03	0.11	3.87	1½-2½	
3289.89	0.12	3.87	½-1½	
3284.84	0.11	3.89	1½-3½	
3287.35	0.12	3.87	½-2½	

I A	E P Low	E P High	J	Multiplet (No)
Fe II continued				
3124.18	0.00	3.95	4½-3½	a^6D-b^2F (12F)
3181.05	0.05	3.93	3½-2½	
3182.21	0.05	3.95	3½-3½	
3209.94	0.08	3.93	2½-2½	
3190.76	0.08	3.95	2½-3½	
3230.17	0.11	3.93	1½-2½	
8616.96	0.23	1.66	4½-3½	a^4F-a^4P (13F)
8891.88	0.30	1.89	3½-2½	
9033.45	0.35	1.72	2½- ½	
9051.92	0.30	1.68	3½-2½	
9226.60	0.35	1.89	2½-1½	
9267.54	0.38	1.72	1½- ½	
9399.02	0.35	1.66	2½-2½	
9470.93	0.38	1.69	1½-1½	
9852.70	0.38	1.86	1½-2½	
7155.14	0.23	1.96	4½-4½	a^4F-a^2G (14F)
7171.98	0.30	2.02	3½-3½	
6898.18	0.23	2.02	4½-3½	
7452.50	0.30	1.96	3½-4½	
7388.18	0.35	2.02	2½-3½	
7688.19	0.35	1.96	2½-4½	
7544.00	0.38	2.02	1½-3½	
6440.40	0.35	2.27	2½-1½	a^4F-a^2P (15F)
6339.70	0.38	2.33	1½- ½	
6558.51	0.38	2.27	1½-1½	
5413.34	0.23	2.51	4½-5½	a^4F-a^2H (16F)
5440.45	0.30	2.57	3½-4½	
5280.25	0.23	2.57	4½-4½	
5362.06	0.23	2.53	4½-3½	a^4F-a^2D (17F)
5295.70	0.30	2.63	3½-1½	
5527.33	0.30	2.53	3½-2½	
5412.64	0.35	2.63	2½-1½	
5654.85	0.35	2.53	2½-2½	
5495.82	0.38	2.63	1½-1½	
5745.70	0.38	2.53	1½-2½	
5273.38	0.23	2.57	4½-3½	a^4F-b^4P (18F)
5158.00	0.30	2.69	3½-1½	
5107.95	0.35	2.77	2½- ½	
5433.15	0.30	2.57	3½-2½	
5268.88	0.35	2.69	2½-1½	
5181.97	0.38	2.77	1½- ½	
5556.31	0.35	2.57	2½-2½	
5347.87	0.38	2.69	1½-1½	
5644.00	0.38	2.57	1½-2½	
5158.81	0.23	2.82	4½-6½	a^4F-a^4H (19F)
5281.81	0.30	2.85	3½-5½	
5333.85	0.35	2.86	2½-4½	
5376.47	0.38	2.68	1½-3½	
5111.83	0.23	2.65	4½-5½	
5220.06	0.30	2.66	3½-4½	
5298.84	0.35	2.68	2½-3½	
5073.40	0.23	2.68	4½-4½	
5184.80	0.30	2.68	3½-3½	
5039.10	0.23	2.68	4½-3½	
4814.55	0.23	2.79	4½-4½	a^4F-b^4F (20F)
4905.35	0.30	2.82	3½-3½	
4973.39	0.35	2.83	2½-2½	
5020.24	0.38	2.84	1½-1½	
4774.74	0.23	2.82	4½-3½	
4874.49	0.30	2.83	3½-2½	
4950.74	0.35	2.84	2½-1½	
4947.38	0.30	2.79	3½-4½	
5005.52	0.35	2.82	2½-3½	
5043.53	0.38	2.83	1½-2½	
4745.49	0.23	2.83	4½-2½	
4852.73	0.30	2.84	3½-1½	
5049.29	0.35	2.79	2½-4½	
5078.57	0.38	2.82	1½-3½	
4243.98	0.23	3.14	4½-5½	a^4F-a^4G (21F)
4278.83	0.30	3.19	3½-4½	
4319.82	0.35	3.21	2½-3½	
4358.37	0.38	3.22	1½-2½	
4177.21	0.23	3.19	4½-4½	
4244.81	0.30	3.21	3½-3½	
4305.90	0.35	3.22	2½-2½	
4146.65	0.23	3.21	4½-3½	
4231.58	0.30	3.22	3½-2½	
4134.01	0.23	3.22	4½-2½	
4346.85	0.30	3.14	3½-5½	
4352.78	0.35	3.19	2½-4½	
4372.43	0.38	3.21	1½-3½	
4358.14	0.35	3.18	2½-1½	a^4F-b^2P (22F)
4197.81	0.38	3.32	1½- ½	
4409.88	0.38	3.18	1½-1½	
4114.48	0.23	3.23	4½-5½	a^4F-b^2H (23F)
4178.95	0.30	3.25	3½-4½	
4083.78	0.23	3.25	4½-4½	
3929.35	0.23	3.37	4½-3½	a^4F-a^2F (24F)
3968.88	0.30	3.41	3½-2½	
3882.73	0.23	3.41	4½-2½	
4017.38	0.30	3.37	3½-3½	
4033.98	0.35	3.41	2½-2½	
4084.32	0.35	3.37	2½-3½	
4080.00	0.38	3.41	1½-2½	
4131.51	0.38	3.37	1½-3½	
3505.81	0.23	3.75	4½-4½	a^4F-b^2G (25F)
3528.28	0.30	3.80	3½-3½	
3460.20	0.23	3.80	4½-3½	
3575.72	0.30	3.75	3½-4½	
3579.81	0.35	3.80	2½-3½	
3828.65	0.35	3.75	2½-4½	
3816.00	0.38	3.80	1½-3½	

I A	E P Low	E P High	J	Multiplet (No)
Fe II continued				
3376.80	0.23	3.89	4½-3½	a^4F-b^4D (26F)
3452.30	0.30	3.87	3½-2½	
3504.51	0.35	3.87	2½-1½	
3538.69	0.38	3.87	1½- ½	
3387.10	0.23	3.87	4½-2½	
3455.11	0.30	3.87	3½-1½	
3504.02	0.35	3.87	2½- ½	
3440.99	0.30	3.89	3½-3½	
3501.62	0.35	3.87	2½-2½	
3539.19	0.38	3.87	1½-1½	
3489.98	0.35	3.89	2½-3½	
3536.25	0.38	3.87	1½-2½	
3524.38	0.38	3.89	1½-3½	
3318.38	0.23	3.95	4½-3½	a^4F-b^2F (27F)
3402.50	0.30	3.93	3½-2½	
3339.14	0.23	3.93	4½-2½	
3380.95	0.30	3.95	3½-3½	
3450.39	0.35	3.93	2½-2½	
3428.24	0.35	3.95	2½-3½	
3484.01	0.38	3.93	1½-2½	
3461.42	0.38	3.95	1½-3½	
10028.62	1.04	2.27	2½-1½	a^4D-a^2P (28F)
9795.21	1.07	2.33	1½- ½	
10327.56	1.07	2.27	1½-1½	
9957.44	1.09	2.33	½- ½	
10508.07	1.09	2.27	½-1½	
7958.50	0.98	2.53	3½-2½	a^4D-a^2D (29F)
7740.11	1.04	2.63	2½-1½	
8245.12	1.04	2.53	2½-2½	
7916.98	1.07	2.63	1½-1½	
8446.11	1.07	2.53	1½-2½	
8022.63	1.09	2.63	½-1½	
7764.69	0.98	2.57	3½-2½	a^4D-b^4P (30F)
7449.45	1.04	2.89	2½-1½	
7281.87	1.07	2.77	1½- ½	
7214.69	0.98	2.69	3½-1½	
7131.77	1.04	2.77	2½- ½	
8037.29	1.04	2.57	2½-2½	
7613.15	1.07	2.89	1½-1½	
7370.94	1.09	2.77	½- ½	
8228.16	1.07	2.57	1½-2½	
7710.79	1.09	2.69	½-1½	
8342.34	1.09	2.57	½-2½	
6809.21	0.98	2.79	3½-4½	a^4D-b^4F (31F)
6933.87	1.04	2.82	2½-3½	
7011.24	1.07	2.83	1½-2½	
7047.99	1.09	2.84	½-1½	
6729.85	0.98	2.82	3½-3½	
8872.17	1.04	2.83	2½-2½	
8988.32	1.07	2.84	1½-1½	
8671.90	0.98	2.83	3½-2½	
6829.01	1.04	2.84	2½-1½	
7017.94	1.04	2.79	2½-4½	
7075.26	1.07	2.82	1½-3½	
7093.98	1.09	2.83	½-2½	
6631.20	0.98	2.84	3½-1½	
6507.62	0.98	2.88	3½-2½	a^4D-a^6S (32F)
6698.02	1.04	2.88	2½-2½	
6830.06	1.07	2.88	1½-2½	
5721.35	0.98	3.14	3½-5½	a^4D-a^4G (33F)
5741.11	1.04	3.19	2½-4½	
5778.35	1.07	3.21	1½-3½	
5809.43	1.09	3.22	½-2½	
5600.68	0.98	3.19	3½-4½	
5683.56	1.04	3.21	2½-3½	
5753.83	1.07	3.22	1½-2½	
5545.88	0.98	3.21	3½-3½	
5659.83	1.04	3.22	2½-2½	
5523.28	0.98	3.22	3½-2½	
5746.96	1.04	3.18	2½-1½	a^4D-b^2P (34F)
5477.25	1.07	3.32	1½- ½	
5843.90	1.07	3.18	1½-1½	
5527.61	1.09	3.32	½- ½	
5901.28	1.09	3.18	½-1½	
5183.94	0.98	3.37	3½-3½	a^4D-a^2F (35F)
5199.18	1.04	3.41	2½-2½	
5083.72	0.98	3.41	3½-2½	
5283.11	1.04	3.37	2½-3½	
5278.39	1.07	3.41	1½-2½	
4249.07	0.98	3.89	3½-3½	a^4D-b^4D (36F)
4347.35	1.04	3.87	2½-2½	
4407.18	1.07	3.87	1½-1½	
4438.92	1.09	3.87	½- ½	
4268.34	0.98	3.87	3½-2½	
4351.80	1.04	3.87	2½-1½	
4406.39	1.07	3.87	1½- ½	
4329.43	1.04	3.89	2½-3½	
4402.60	1.07	3.87	1½-2½	
4439.73	1.09	3.87	½-1½	
4270.62	0.98	3.87	3½-1½	
4351.05	1.04	3.87	2½- ½	
4384.21	1.07	3.89	1½-3½	
4435.08	1.09	3.87	½-2½	
4157.89	0.98	3.95	3½-3½	a^4D-b^2F (37F)
4268.67	1.04	3.93	2½-2½	
4190.53	0.98	3.93	3½-2½	
4234.81	1.04	3.95	2½-3½	
4331.92	1.07	3.93	1½-2½	
8119.18	1.86	3.18	2½-1½	a^4P-b^2P (38F)
7539.87	1.69	3.32	1½- ½	
8252.38	1.89	3.18	1½-1½	
7873.74	1.72	3.32	½- ½	
8413.26	1.72	3.18	½-1½	

I A	E P Low	E P High		Multiplet (No)
Fe II continued				
5551.31	1.66	3.89	2½-3½	a^4P-b^4D (39F)
5643.44	1.69	3.87	1½-2½	
5725.92	1.72	3.87	½-1½	
5580.82	1.66	3.87	2½-2½	
5650.94	1.69	3.87	1½-1½	
5724.62	1.72	3.87	½- ½	
5588.15	1.66	3.87	2½-1½	
5649.67	1.69	3.87	1½- ½	
10431.10	1.96	3.14	4½-5½	a^2G-a^4G (40F)
10594.89	2.02	3.19	3½-4½	
10036.79	1.96	3.19	4½-4½	
10400.53	2.02	3.21	3½-3½	
9862.21	1.96	3.21	4½-3½	
10321.34	2.02	3.22	3½-2½	
9682.13	1.96	3.23	4½-5½	a^2G-b^2H (41F)
10013.88	2.02	3.25	3½-4½	
9513.87	1.96	3.25	4½-4½	
8715.84	1.96	3.37	4½-3½	a^2G-a^2F (42F)
8885.66	2.02	3.41	3½-3½	
9133.63	2.02	3.37	3½-3½	
6873.87	1.96	3.75	4½-4½	a^2G-b^2G (43F)
6944.91	2.02	3.80	3½-3½	
6700.68	1.96	3.80	4½-3½	
7131.13	2.02	3.75	3½-4½	
6188.55	1.96	3.95	4½-3½	a^2G-b^2F (44F)
6473.86	2.02	3.93	3½-2½	
6396.30	2.02	3.95	3½-3½	
10796.48	2.27	3.41	1½-2½	a^2P-a^2F (45F)
7674.06	2.27	3.87	1½-2½	a^2P-b^4D (46F)
8012.08	2.33	3.87	½-1½	
7687.94	2.27	3.87	1½-1½	
8009.53	2.33	3.87	½- ½	
7685.58	2.27	3.87	1½- ½	
7432.23	2.27	3.93	1½-2½	a^2P-b^2F (47F)
9949.32	2.51	3.75	5½-4½	a^2H-b^2G (48F)
10038.79	2.57	3.80	4½-3½	
10432.60	2.57	3.75	4½-4½	
8931.47	2.57	3.95	4½-3½	a^2H-b^2F (49F)
9755.81	2.53	3.80	2½-3½	a^2D-b^2G (50F)
9116.41	2.53	3.89	2½-3½	a^2D-b^4D (51F)
9918.01	2.63	3.87	1½-2½	
9196.26	2.53	3.87	2½-2½	
9941.20	2.63	3.87	1½-1½	
9216.20	2.53	3.87	2½-1½	
9937.27	2.63	3.87	1½- ½	
8706.79	2.53	3.95	2½-3½	a^2D-b^2F (52F)
9517.76	2.63	3.93	1½-2½	
8851.13	2.53	3.93	2½-2½	

Fe III	I P 30.48			
5151.9	0.00	2.40	4-3	a^5D-a^3P (1F)
4936.4	0.05	2.55	3-2	
4883.9	0.09	2.62	2-1	
5270.4	0.05	2.40	3-3	
5011.3	0.09	2.55	2-2	
4930.5	0.12	2.62	1-1	
5355.9	0.09	2.40	2-3	
5060.3	0.12	2.55	1-2	
5412.0	0.12	2.40	1-3	
5084.8	0.13	2.55	0-1	
5439.9	0.13	2.40	0-3	
4985.9	0.00	2.48	4-6	a^5D-a^3H (2F)
5032.7	0.05	2.51	3-5	
5063.7	0.09	2.53	2-4	
4924.5	0.00	2.51	4-5	
4987.2	0.05	2.53	3-4	
4881.0	0.00	2.53	4-4	
4658.1	0.00	2.65	4-4	a^5D-a^3F (3F)
4701.5	0.05	2.68	3-3	
4733.9	0.09	2.70	2-2	
4607.0	0.00	2.68	4-3	
4667.0	0.05	2.70	3-2	
4754.7	0.05	2.65	3-4	
4769.4	0.09	2.68	2-3	
4777.7	0.12	2.70	1-2	
4573.9	0.00	2.70	4-2	
4824.1	0.09	2.65	2-4	
4813.9	0.12	2.68	1-3	
4799.5	0.13	2.70	0-2	
4070.7	0.00	3.03	4-5	a^5D-a^3G (4F)
4079.7	0.05	3.08	3-4	
4096.6	0.09	3.10	2-3	
4008.3	0.00	3.08	4-4	
4046.4	0.05	3.10	3-3	

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Fe III continued				
3976.2	0.00	3.10	4-3	a^5D-a^3G (4F)
4144.3	0.05	3.03	3-5	
4130.7	0.09	3.08	2-4	cont
4129.4	0.12	3.10	1-3	
3322.54	0.00	3.71	4-3	a^5D-a^7S (5F)
3371.4	0.05	3.71	3-3	
3406.2	0.09	3.71	2-3	
3428.8	0.12	3.71	1-3	
3239.7	0.00	3.81	4-3	a^5D-a^3D (6F)
3301.6	0.05	3.79	3-2	
3333.8	0.09	3.79	2-1	
3254.7	0.00	3.79	4-2	
3300.5	0.05	3.79	3-1	
3286.2	0.05	3.81	3-3	
3334.9	0.09	3.79	2-2	
3355.5	0.12	3.79	1-1	
3319.2	0.09	3.81	2-3	
3356.6	0.12	3.79	1-2	
3366.2	0.13	3.79	0-1	
3340.7	0.12	3.81	1-3	
3367.3	0.13	3.79	0-2	
3236.7	0.00	3.81	4-4	a^5D-a^1G (7F)
3283.1	0.05	3.81	3-4	
3316.1	0.09	3.81	2-4	
8728.9	2.40	3.81	2-3	a^3P-a^3D (8F)
9969.6	2.55	3.79	1-2	
10504.3	2.62	3.79	0-1	
8838.2	2.40	3.79	2-2	
9960.0	2.55	3.79	1-1	
8830.7	2.40	3.79	2-1	
7078.2	2.55	4.30	1-0	a^3P-a^1S (9F)
6096.3	2.40	4.42	2-2	a^3P-a^1D (10F)
6614.0	2.55	4.42	1-2	
9701.3	2.48	3.75	6-6	a^3H-a^1I (11F)
9942.2	2.51	3.75	5-6	
9444.2	2.51	3.81	5-4	a^3H-a^1G (12F)
9608.6	2.53	3.81	4-4	
10640.4	2.65	3.81	4-3	a^3F-a^3D (13F)
11088.0	2.68	3.79	3-2	
11272.6	2.70	3.79	2-1	
10916.5	2.68	3.81	3-3	
11284.9	2.70	3.79	2-2	
11107.3	2.70	3.81	2-3	
10608.1	2.65	3.81	4-4	a^3F-a^1G (14F)
10882.6	2.68	3.81	3-4	
7088.3	2.68	4.42	3-2	a^3F-a^1D (15F)
7220.0	2.70	4.42	2-2	

Fe V	I P ?			
3970.1	0.16	3.27	4-2	$3d^4\ ^5D-3d^4\ ^3P$ (1F)
4136.4	0.10	3.08	3-1	
4229.8	0.05	2.97	2-0	
3895.7	0.10	3.27	3-2	
4071.5	0.05	3.08	2-1	
4181.3	0.02	2.97	1-0	
3838.1	0.05	3.27	2-2	
4026.6	0.02	3.08	1-1	
3798.2	0.02	3.27	1-2	
4003.2	0.00	3.08	0-1	
3777.4	0.00	3.27	0-2	
4123.9	0.16	3.15	4-6	$3d^4\ ^5D-3d^4\ ^3H$ (2F)
4093.0	0.10	3.11	3-5	
4077.5	0.05	3.08	2-4	
4175.2	0.16	3.11	4-5	
4142.5	0.10	3.08	3-4	
4226.8	0.16	3.08	4-4	
3891.8	0.16	3.33	4-4	$3d^4\ ^5D-3d^4\ ^3F$ (3F)
3838.9	0.10	3.31	3-3	
3794.6	0.05	3.30	2-2	
3911.1	0.16	3.31	4-3	
3850.8	0.10	3.30	3-2	
3820.2	0.10	3.33	3-4	
3782.9	0.05	3.31	2-3	
3755.5	0.02	3.30	1-2	
3923.5	0.16	3.30	4-2	
3764.8	0.05	3.33	2-4	
3744.1	0.02	3.31	1-3	
3735.2	0.00	3.30	0-2	
3430.3	0.16	3.76	4-5	$3d^4\ ^5D-3d^4\ ^3G$ (4F)
3406.6	0.10	3.72	3-4	
3400.3	0.05	3.68	2-3	
3463.4	0.16	3.72	4-4	
3445.4	0.10	3.68	3-3	
3374.6	0.10	3.76	3-5	
3362.5	0.05	3.72	2-4	
3368.9	0.02	3.68	1-3	
3503.5	0.16	3.68	4-3	

I A	E P Low	E P High	J	Multiplet (No)
Fe VI I P ?				
5678.0	0.25	2.42	4½-3½	$3d^3\ ^4F-3d^3\ ^4$ (1F)
5631.6	0.15	2.34	3½-2½	
5485.7	0.06	2.31	2½- ½	
5428.6	0.15	2.42	3½-3½	
5425.3	0.06	2.34	2½-1½	
5336.4	0.00	2.31	1½- ½	
5236.6	0.06	2.42	2½-2½	
5279.2	0.00	2.34	1½-1½	
5100.4	0.00	2.42	1½-2½	
5177.0	0.25	2.63	4½-4½	$3d^3\ ^4F-3d^3$ (2F)
5146.8	0.15	2.54	3½-3½	
5370.5	0.25	2.54	4½-3½	
4968.8	0.15	2.63	3½-4½	
4974.0	0.06	2.54	2½-3½	
4807.5	0.06	2.63	2½-4½	
4850.9	0.00	2.54	1½-3½	
3995.8	0.15	3.23	3½-1½	$3d^3\ ^4F-3d^3\ ^2$ (3F)
3849.1	0.06	3.27	2½- ½	
3890.9	0.06	3.23	2½-1½	
3774.9	0.00	3.27	1½- ½	
3815.1	0.00	3.23	1½-1½	
3776.1	0.25	3.51	4½-3½	$3d^3\ ^4F-3d$ (4F)
3645.7	0.15	3.53	3½-2½	
3664.1	0.15	3.51	3½-2½	
3558.1	0.06	3.53	2½-1½	
3575.6	0.06	3.51	2½-2½	
3494.7	0.00	3.53	1½-1½	
3511.6	0.00	3.51	1½-2½	
3675.2	0.25	3.60	4½-5½	$3d^3\ ^4F-3d^3\ ^2H$ (5F)
3630.3	0.15	3.55	3½-4½	
3740.2	0.25	3.55	4½-4½	
3569.0	0.15	3.60	3½-5½	
3543.5	0.06	3.55	2½-4½	

Fe VII	I P ?			
6599.7	0.29	2.16	4-2	$3d^2\ ^3F-3d^2\ ^1D$ (1F)
6085.5	0.13	2.16	3-2	
5720.9	0.00	2.16	2-2	
5276.1	0.29	2.63	4-2	$3d^2\ ^3F-3d^2\ ^3P$ (2F)
5158.3	0.13	2.52	3-1	
4989.4	0.00	2.47	2-0	
4942.3	0.13	2.63	3-2	
4893.9	0.00	2.52	2-1	
4699.0	0.00	2.63	2-2	
3759.9	0.29	3.57	4-4	$3d^2\ ^3F-3d^2\ ^1G$ (3F)
3587.2	0.13	3.57	3-4	
3457.3	0.00	3.57	2-4	
8738.1	2.16	3.57	2-4	$3d^2\ ^1D-3d^2\ ^1G$ (4F)

Fe X	I P 261?			
6372.9 C) 6374.51 C)	0.00	1.94	1½- ½	$3p^5\ ^2p^o-3p^5\ ^2p^o$ (1F)

Fe XI	I P 289?			
7888.6 C) 7891.94 C)	0.00	1.56	2-1	$3p^4\ ^3p-3p^4\ ^3p$? (1F)
3986.1	1.56	4.66	1-2	$3p^4\ ^3p-3p^4\ ^1D$? (2F)

Fe XIII	I P 355?			
10796.2 C) 10797.95 C)	1.15	2.29	1-2	$3p^2\ ^3p-3p^2\ ^3p$ (1F)
10749.7 C) 10746.80 C)	0.00	1.15	0-1	
3387.7	2.29	5.93	2-2	$3p^2\ ^3p-3p^2\ ^1D$ (2F)

Fe XIV	I P 390?			
5303.8 C) 5302.86 C)	0.00	2.33	½-1½	$3p^2p^o-3p^2p^o$ (1F)

Fe XV	I P 454?			
7080.2 C) 7059.62 C)	(29.8	31.6)	1-2	$3p^3P^o-3p^3P^o$ (1F)

REVISED MULTIPLET TABLE

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
I P 17.1				
	0.00	1.21	4-4	$3d^8\ ^3F-4s^3F$ (1F)
	0.12	1.32	3-3	
	0.20	1.40	2-2	
	0.00	1.32	4-3	
	0.12	1.40	3-2	
	0.12	1.21	3-4	
9	0.20	1.32	2-3	
3	0.00	1.40	4-2	
8	0.20	1.21	2-4	
	0.00	2.19	4-3	$3d^8\ ^3F-4s^5P$ (2F)
	0.12	2.23	3-2	
	0.20	2.26	2-1	
	0.12	2.19	3-3	
	0.20	2.23	2-3	
	0.20	2.19	2-3	
	0.50	2.19	4-3	$4s^5F-4s^5P$ (3F)
	0.56	2.23	3-2	
	0.61	2.26	2-1	
	0.56	2.19	3-3	
	0.61	2.23	2-2	
	0.64	2.26	1-1	
3	0.61	2.19	2-3	
	0.64	2.23	1-2	

I	I P ?			
.5	0.22	3.77	4-2	$3d^4\ ^5D-3d^4\ ^3P$ (1F)
1.1	0.14	3.51	3-1	
.0	0.07	3.35	2-0	
3.3	0.14	3.77	3-2	
3.8	0.07	3.51	2-1	
3.3	0.03	3.35	1-0	
1.5	0.07	3.77	2-2	
8.8	0.03	3.51	1-1	
9.8	0.03	3.77	1-2	
2.9	0.00	3.51	0-1	
7.3	0.00	3.77	0-2	
4.1	0.22	3.80	4-4	$3d^4\ ^5D-3d^4\ ^3F$ (2F)
8.2	0.14	3.78	3-3	
6.9	0.07	3.77	2-2	
5.7	0.22	3.78	4-3	
8.5	0.14	3.77	3-2	
7.5	0.14	3.80	3-4	
6.9	0.07	3.78	2-3	
5.4	0.03	3.77	1-2	
6.5	0.22	3.77	4-2	
7.0	0.07	3.80	2-4	
5.6	0.03	3.78	1-3	
2.9	0.00	3.77	0-2	

VII	I P ?			
6.3	0.34	2.74	4½-3½	$3d^3\ ^4F-3d^3\ ^4P$ (1F)
6.3	0.20	2.63	3½-2½	
1.1	0.09	2.60	2½- ½	
8.4	0.20	2.74	3½-3½	
1.6	0.09	2.63	2½-2½	
8.9	0.00	2.60	1½- ½	
2.3	0.09	2.74	2½-3½	
2.6	0.00	2.63	1½-2½	
5.9	0.00	2.74	1½-3½	
5.0	0.34	3.09	4½-4½	$3d^3\ ^4F-3d^3\ ^2G$ (2F)
5.1	0.20	2.98	3½-3½	
5.5	0.34	2.98	4½-3½	
2.7	0.20	3.09	3½-4½	
	0.09	2.98	2½-3½	
3.1	0.09	3.09	2½-4½	
9.5	0.00	2.98	1½-3½	
2.5	0.34	3.87	4½-2½	$3d^3\ ^4P-3d^3\ ^2D$ (3F)
8.5	0.20	3.90	3½-1½	
1.7	0.20	3.87	3½-2½	
9.8	0.09	3.90	2½-1½	
1.7	0.09	3.87	2½-2½	
8.2	0.00	3.90	1½-1½	
9.1	0.00	3.87	1½-2½	
9.3	0.34	4.18	4½-5½	$3d^3\ ^4F-3d^3\ ^2H$ (4F)
9.5	0.20	4.10	3½-4½	
4.7	0.34	4.10	4½-4½	
8.6	0.20	4.18	3½-5½	
1.0	0.09	4.10	2½-4½	
2.8	2.74	3.87	2½-2½	$3d^3\ ^4P-3d^3\ ^2D$ (5F)
3.5	2.63	3.90	1½-1½	
1.7	2.74	3.90	2½-1½	
3.5	2.63	3.87	1½-2½	
8.5	2.60	3.90	½-1½	
7.6	3.09	4.18	4½-5½	$3d^3\ ^2G-3d^3\ ^2H$ (6F)
6.0	2.98	4.10	3½-4½	
9.6	3.09	4.10	4½-4½	

Co VIII	I P ?			
8.4	0.42	2.77	4-2	$3d^2\ ^3F-3d^2\ ^1D$ (1F)
5.9	0.19	2.77	3-2	
1.0	0.00	2.77	2-2	

Co VIII	continued			
4564.7	0.42	3.13	4-2	$3d^2\ ^3F-3d^2\ ^3P$ (2F)
4493.3	0.19	2.94	3-1	
4422.4	0.00	2.79	2-0	
4198.0	0.19	3.13	3-2	
4204.9	0.00	2.94	2-1	
3946.0	0.00	3.13	2-2	

Co XI	I P 304?			
5185	0.00	2.38	1½- ½	$3p^5\ 2p^o-3p^5\ 2p^o$ (1F)

N1 I	I P 7.61			
7393.71	0.00	1.67	4-2	a^3F-b^1D (1F)
8301.77	0.16	1.67	3-2	
8843.43	0.27	1.67	2-2	
6404.46	0.00	1.93	4-3	a^3F-a^3P (2F)
6941.63	0.16	1.94	3-1	
7243.99	0.27	1.98	2-0	
7003.02	0.16	1.93	3-2	
7395.79	0.27	1.94	2-1	
7464.39	0.27	1.93	2-2	
4523.16	0.00	2.73	4-4	a^3F-a^1G (3F)
4813.27	0.16	2.73	3-4	
5027.34	0.27	2.73	2-4	
7507.44	0.03	1.67	3-2	a^3D-b^1D (4F)
7908.30	0.11	1.67	2-2	
8466.38	0.21	1.67	1-2	
6489.61	0.03	1.93	3-2	a^3D-a^3P (5F)
6730.25	0.11	1.94	2-1	
6989.04	0.21	1.98	1-0	
6437.70	0.03	1.94	3-1	
6604.30	0.11	1.98	2-0	
6787.00	0.11	1.93	2-2	
7130.24	0.21	1.94	1-1	
7193.97	0.21	1.93	1-2	
9887.18	0.42	1.67	2-2	a^1D-b^1D (6F)
8832.31	0.42	1.82	2-0	a^1D-a^1S (7F)
8194.57	0.42	1.93	2-2	a^1D-a^3P (8F)
8111.97	0.42	1.94	2-1	
7929.70	0.42	1.98	2-0	

N1 II	I P 18.4			
10718.16	0.00	1.15	2½-3½	a^2D-a^4F (1F)
11618.88	0.19	1.25	1½-2½	
9885.74	0.00	1.25	2½-2½	
10931.07	0.19	1.32	1½-1½	
9377.33	0.00	1.32	2½-1½	
7379.57	0.00	1.67	2½-3½	a^2D-a^2F (2F)
7413.33	0.19	1.85	1½-2½	
6668.16	0.00	1.85	2½-2½	
8303.23	0.19	1.67	1½-3½	
4326.85	0.00	2.85	2½-2½	a^2D-b^2D (3F)
4485.87	0.19	2.94	1½-1½	
4201.74	0.00	2.94	2½-1½	
4628.77	0.19	2.85	1½-2½	
3993.65	0.00	3.09	2½-2½	a^2D-a^4P (4F)
4294.70	0.19	3.06	1½-1½	
4033.56	0.00	3.06	2½-1½	
4285.90	0.19	3.07	1½- ½	
4249.48	0.19	3.09	1½-2½	
4025.80	0.00	3.07	2½- ½	
3439.29	0.00	3.59	2½-1½	a^2D-a^2P (5F)
3559.86	0.19	3.65	1½- ½	
3378.55	0.00	3.65	2½- ½	
3627.35	0.19	3.59	1½-1½	
3074.11	0.00	4.01	2½-3½	a^2D-a^2G (6F)
6794.37	1.04	2.85	4½-2½	a^4F-b^2D (7F)
6911.05	1.15	2.94	3½-1½	
7256.16	1.15	2.85	3½-2½	
7307.83	1.25	2.94	2½-1½	
7694.82	1.25	2.85	2½-2½	
7612.96	1.32	2.94	1½-1½	
8033.86	1.32	2.85	1½-2½	
6007.34	1.04	3.09	4½-2½	a^4F-a^4P (8F)
6467.52	1.15	3.06	3½-1½	
6791.61	1.25	3.07	2½- ½	
6365.52	1.15	3.09	3½-2½	
6813.73	1.25	3.06	2½-1½	
7054.37	1.32	3.07	1½- ½	
6700.61	1.25	3.09	2½-2½	
7078.25	1.32	3.06	1½-1½	
6958.25	1.32	3.09	1½-2½	
5274.27	1.25	3.59	2½-1½	a^4F-a^2P (9F)
5281.46	1.32	3.65	1½- ½	
5431.39	1.32	3.59	1½-1½	

N1 II	continued			
4147.30	1.04	4.01	4½-4½	a^4F-a^2G (10F)
4310.46	1.15	4.01	3½-3½	
4143.17	1.04	4.01	4½-3½	
4314.92	1.15	4.01	3½-4½	
4461.54	1.25	4.01	2½-3½	
4466.33	1.25	4.01	2½-4½	
4573.45	1.32	4.01	1½-3½	
10459.79	1.67	2.85	3½-2½	a^2F-b^2D (11F)
11359.87	1.85	2.94	2½-1½	
12323.27	1.85	2.85	2½-2½	
8704.24	1.67	3.09	3½-2½	a^2F-a^4P (12F)
10209.10	1.85	3.06	2½-1½	
9957.23	1.85	3.09	2½-2½	
7102.84	1.85	3.59	2½-1½	a^2F-a^2P (13F)
5275.83	1.67	4.01	3½-4½	a^2F-a^2G (14F)
5703.64	1.85	4.01	2½-3½	
5269.16	1.67	4.01	3½-3½	
5711.46	1.85	4.01	2½-4½	

N1 VII	I P ?			
3191.2	0.29	4.16	4-2	$3d^4\ ^5D-3d^4\ ^3P$ (1F)
3379.7	0.19	3.84	3-1	
3503.8	0.10	3.62	2-0	
3106.0	0.19	4.16	3-2	
3299.6	0.10	3.84	2-1	
3440.3	0.03	3.62	1-0	
3038.3	0.10	4.16	2-2	
3243.2	0.03	3.84	1-1	
2990.4	0.03	4.16	1-2	
3214.5	0.00	3.84	0-1	
3413.3	0.29	3.91	4-5	$3d^4\ ^5D-3d^4\ ^3H$ (2F)
3396.7	0.19	3.83	3-4	
3486.6	0.29	3.83	4-4	
3165.4	0.29	4.19	4-4	$3d^4\ ^5D-3d^4\ ^3F$ (3F)
3106.1	0.19	4.16	3-3	
3048.8	0.10	4.15	2-2	
3191.3	0.29	4.16	4-3	
3117.1	0.19	4.15	3-2	
3081.6	0.19	4.19	3-4	
3038.4	0.10	4.16	2-3	
3000.6	0.03	4.15	1-2	

N1 VIII	I P ?			
4772.4	0.46	3.05	4½-2½	$3d^3\ ^4F-3d^3\ ^4P$ (1F)
4644.2	0.27	2.93	3½-1½	
4493.3	0.13	2.87	2½- ½	
4446.2	0.27	3.05	3½-2½	
4404.4	0.13	2.93	2½-1½	
4297.8	0.00	2.87	1½- ½	
4225.9	0.13	3.05	2½-2½	
4216.4	0.00	2.93	1½-1½	
4052.5	0.00	3.05	1½-2½	
4106.1	0.46	3.46	4½-4½	$3d^3\ ^4F-3d^3\ ^2G$ (2F)
4032.3	0.27	3.33	3½-3½	
4298.8	0.46	3.33	4½-3½	
3862.3	0.27	3.46	3½-4½	
3850.3	0.13	3.33	2½-3½	
3695.0	0.13	3.46	2½-4½	
3705.8	0.00	3.33	1½-3½	
3228.2	0.46	4.28	4½-2½	$3d^3\ ^4F-3d^3\ ^2D$ (3F)
3035.3	0.27	4.34	3½-1½	
3075.6	0.27	4.28	3½-2½	
3026.4	0.46	4.54	4½-4½	$3d^3\ ^4F-3d^3\ ^2H$ (4F)
9977.1	3.05	4.28	2½-2½	$3d^3\ ^4P-3d^3\ ^2D$ (5F)
8761.8	2.93	4.34	1½-1½	
9565.8	3.05	4.34	2½-1½	
9105.8	2.93	4.28	1½-2½	
8430.1	2.87	4.34	½-1½	
10627.5	3.46	4.63	4½-5½	$3d^3\ ^2G-3d^3\ ^2H$ (6F)
10235.3	3.33	4.54	3½-4½	
11509.6	3.46	4.54	4½-4½	

N1 IX	I P ?			
5056.5	0.61	3.05	4-2	$3d^2\ ^3F-3d^2\ ^1D$ (1F)
4331.7	0.20	3.05	3-2	
4043.4	0.00	3.05	2-2	
4190.6	0.61	3.56	4-2	$3d^2\ ^3F-3d^2\ ^3P$ (2F)
4065.7	0.20	3.24	3-1	
4112.7	0.00	3.00	2-0	
3680.3	0.20	3.56	3-2	
3810.6	0.00	3.24	2-1	
3470.0	0.00	3.56	2-2	

N1 XII	I P ?			
4231.4	0.00	(2.92)	1½- ½	$3p^5\ 2p^o-3p^5\ 2p^o$ (1F)

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Ni XIII I P 350?				
5116.3	0.00	(2.41)	2-1	$3p^4\ ^3P-3p^4\ ^3P$ (1F)
5116.03 C)				
3643.3	(2.41)	5.80)	1-2	$3p^4\ ^3P-3p^4\ ^1D$ (2F)
Ni XV I P 455?				
8024	(1.84	3.38)	1-2	$3p^2\ ^3P-3p^2\ ^3P$ (1F)
8024.21 C)				
6700.6	0.00	(1.84)	0-1	
6701.83 C)				
Ni XVI I P ?				
3601.3	0.00	3.43	½-1½	$3p^3P^o-3p^2P^o$ (1F)
Cu II I P 20.18				
4375.71	0.00	2.82	0-2	$3d^{10}\ ^1S-4s^3D$ (1F)
4165.79	0.00	2.96	0-1	
3906.34	0.00	3.24	0-2	$3d^{10}\ ^1S-4s^1D$ (2F)
Kr III I P 36.8				
6826.9	0.00	1.81	2-2	$4p^4\ ^3P-4p^4\ ^1D$ (1F)
9902.2	0.56	1.81	1-2	
Sr II I P 10.98				
6738.40	0.00	1.83	½-2½	5^2S-4^2D (1F)
6868.18	0.00	1.80	½-1½	
Y II I P 12.3				
7091.17	0.00	1.74	0-2	a^1S-a^3P (1F)
7131.55	0.00	1.73	0-1	
6739.91	0.00	1.83	0-2	a^1S-b^1D (2F)
7904.04	0.18	1.74	3-2	a^3D-a^3P (3F)
7706.06	0.13	1.73	2-1	
7664.67	0.10	1.71	1-0	
7954.24	0.18	1.73	3-1	
7787.00	0.13	1.71	2-0	
7658.92	0.13	1.74	2-2	
7586.23	0.10	1.73	1-1	
7540.54	0.10	1.74	1-2	
7470.10	0.18	1.83	3-2	a^3D-b^1D (4F)
7250.78	0.13	1.83	2-2	
7144.60	0.10	1.83	1-2	
9255.10	0.41	1.74	2-2	a^1D-a^3P (5F)
9324.01	0.41	1.73	2-1	
9442.77	0.41	1.71	2-0	
8665.66	0.41	1.83	2-2	a^1D-b^1D (6F)
Y V I P 77				
8284.1	0.00	1.49	1½- ½	$4p^5\ ^2P^o-4p^5\ ^2P^o$ (1F)
Zr II I P 13.97				
10860.44	0.09	1.23	3½-2½	a^4F-b^4P (1F)
10603.65	0.04	1.20	2½-1½	
10464.94	0.00	1.18	1½- ½	
10355.58	0.04	1.23	2½-2½	
10261.18	0.00	1.20	1½-1½	
10028.71	0.00	1.23	1½-2½	
9058.16	0.16	1.53	4½-5½	a^4F-a^2H (2F)
8909.40	0.09	1.48	3½-4½	
9376.93	0.16	1.48	4½-4½	
7786.03	0.16	1.75	4½-2½	a^4F-b^2D (3F)
7893.57	0.09	1.66	3½-1½	
7460.93	0.09	1.75	3½-2½	
7623.44	0.04	1.66	2½-1½	
7219.15	0.04	1.75	2½-2½	
7444.80	0.00	1.66	1½-1½	
7058.76	0.00	1.75	1½-2½	
7769.35	0.16	1.75	4½-4½	a^4F-b^2G (4F)
7518.81	0.09	1.74	3½-3½	
7849.08	0.16	1.74	4½-3½	
7445.63	0.09	1.75	3½-4½	
7273.33	0.04	1.74	2½-3½	
7204.82	0.04	1.75	2½-4½	
7110.54	0.00	1.74	1½-3½	

I A	E P Low	E P High	J	Multiplet (No)
Zr II continued				
7454.82	0.16	1.82	4½-2½	a^4F-c^2D (5F)
7386.11	0.09	1.77	3½-1½	
7156.26	0.09	1.82	3½-2½	
7149.08	0.04	1.77	2½-1½	
6933.53	0.04	1.82	2½-2½	
6991.75	0.00	1.77	1½-1½	
6785.44	0.00	1.82	1½-2½	
5855.37	0.16	2.37	4½-2½	a^4F-d^2D (6F)
5932.88	0.09	2.17	3½-1½	
5669.58	0.09	2.37	3½-2½	
5778.97	0.04	2.17	2½-1½	
5528.87	0.04	2.37	2½-2½	
5675.73	0.00	2.17	1½-1½	
5434.30	0.00	2.37	1½-2½	
5520.18	0.16	2.40	4½-3½	a^4F-b^2F (7F)
5331.46	0.09	2.41	3½-2½	
5495.42	0.16	2.41	4½-2½	
5354.76	0.09	2.40	3½-3½	
5206.84	0.04	2.41	2½-2½	
5229.06	0.04	2.40	2½-3½	
5122.88	0.00	2.41	1½-2½	
5144.39	0.00	2.40	1½-3½	
9607.90	0.46	1.75	4½-2½	b^4F-b^2D (8F)
9870.08	0.41	1.66	3½-1½	
9302.81	0.41	1.75	3½-2½	
9490.96	0.36	1.66	2½-1½	
8872.37	0.36	1.75	2½-2½	
9208.72	0.32	1.66	1½-1½	
8625.25	0.32	1.75	1½-2½	
9582.55	0.46	1.75	4½-4½	b^4F-b^2G (9F)
9291.03	0.41	1.74	3½-3½	
9704.10	0.46	1.74	4½-3½	
9179.54	0.41	1.75	3½-4½	
8954.34	0.36	1.74	2½-3½	
8850.73	0.36	1.75	2½-4½	
8702.70	0.32	1.74	1½-3½	
9108.53	0.46	1.82	4½-2½	b^4F-c^2D (10F)
9089.24	0.41	1.77	3½-1½	
8743.65	0.41	1.82	3½-2½	
8766.76	0.36	1.77	2½-1½	
8444.83	0.36	1.82	2½-2½	
8525.41	0.32	1.77	1½-1½	
8220.64	0.32	1.82	1½-2½	
6829.24	0.46	2.37	4½-2½	b^4F-d^2D (11F)
6984.07	0.41	2.17	3½-1½	
6682.05	0.41	2.37	3½-2½	
6793.01	0.36	2.17	2½-1½	
6449.21	0.36	2.37	2½-2½	
6646.31	0.32	2.17	1½-1½	
6317.64	0.32	2.37	1½-2½	
6377.59	0.46	2.40	4½-3½	b^4F-b^2F (12F)
6165.35	0.41	2.41	3½-2½	
6344.56	0.46	2.41	4½-2½	
6196.53	0.41	2.40	3½-3½	
6015.26	0.36	2.41	2½-2½	
6044.94	0.36	2.40	2½-3½	
5900.64	0.32	2.41	1½-2½	
5929.20	0.32	2.40	1½-3½	
10351.92	0.56	1.75	2½-2½	a^2D-b^2D (13F)
10890.02	0.52	1.66	1½-1½	
11203.92	0.56	1.66	2½-1½	
10083.37	0.52	1.75	1½-2½	
9774.53	0.56	1.82	2½-2½	a^2D-c^2D (14F)
9947.19	0.52	1.77	1½-1½	
10208.43	0.56	1.77	2½-1½	
9534.75	0.52	1.82	1½-2½	
7196.91	0.56	2.27	2½-2½	a^2D-d^2D (15F)
7479.79	0.52	2.17	1½-1½	
7626.54	0.56	2.17	2½-1½	
7066.07	0.52	2.27	1½-2½	
6697.09	0.56	2.40	2½-3½	a^2D-b^2F (16F)
6548.47	0.52	2.41	1½-2½	
6660.68	0.56	2.41	2½-2½	
6583.66	0.52	2.40	1½-3½	
6418.86	0.56	2.48	2½-1½	a^2D-b^2P (17F)
6506.40	0.52	2.48	1½- ½	
6617.17	0.56	2.42	2½- ½	
6314.58	0.52	2.48	1½-1½	
11595.50	0.75	1.82	1½-2½	a^2P-c^2D (18F)
11659.62	0.71	1.77	½-1½	
12211.22	0.75	1.77	1½-1½	
11096.98	0.71	1.82	½-2½	
8137.88	0.75	2.27	1½-2½	a^2P-d^2D (19F)
8408.39	0.71	2.17	½-1½	
8691.53	0.75	2.17	1½-1½	
7889.15	0.71	2.27	½-2½	
7156.94	0.75	2.48	1½-1½	a^2P-b^2P (20F)
7197.88	0.71	2.42	½- ½	
7404.36	0.75	2.48	1½- ½	
6963.85	0.71	2.48	½-1½	
12094.78	0.80	1.82	3½-2½	a^2F-c^3D (21F)
11698.62	0.71	1.77	2½-1½	
11132.24	0.71	1.82	2½-2½	
8380.68	0.80	2.27	3½-2½	a^2F-d^2D (22F)
8428.62	0.71	2.17	2½-1½	
8969.06	0.80	2.17	3½-1½	
7906.95	0.71	2.27	2½-2½	

I A	E P Low	E P High	J	Multiplet (No)
Zr II continued				
7710.56	0.80	2.40	3½-3½	a^2F-b^2F (23F)
7264.43	0.71	2.41	2½-2½	
7662.36	0.80	2.41	3½-2½	
7307.76	0.71	2.40	2½-3½	
9670.04	0.99	2.27	2½-2½	a^4P-d^2D (24F)
10120.75	0.96	2.17	1½-1½	
10461.95	0.99	2.17	2½-1½	
9377.83	0.96	2.27	1½-2½	
8315.71	0.99	2.48	2½-1½	a^4P-b^2P (25F)
8416.96	0.96	2.42	1½- ½	
8098.70	0.96	2.48	1½-1½	
8261.59	0.93	2.42	½- ½	
7954.76	0.93	2.48	½-1½	
8862.47	1.01	2.40	4½-3½	a^2G-b^2F (26F)
8561.42	0.97	2.41	3½-2½	
8798.82	1.01	2.41	4½-2½	
8621.67	0.97	2.40	3½-3½	
9886.87	1.23	2.48	2½-1½	b^4P-b^2P (27F)
10128.19	1.20	2.42	1½- ½	
9670.87	1.20	2.48	1½-1½	
9937.20	1.18	2.42	½- ½	
9496.60	1.18	2.48	½-1½	
Zr III I P 24.0				
5539.74	0.18	2.41	4-3	$4d^2\ ^3F-5s^3D$ (1F)
5517.24	0.08	2.32	3-2	
5433.69	0.00	2.27	2-1	
5773.51	0.18	2.32	4-2	
5643.02	0.08	2.27	3-1	
5303.37	0.08	2.41	3-3	
5316.97	0.00	2.32	2-2	
5118.07	0.00	2.41	2-3	
7853.3	0.42	1.99	2-2	$4d^2\ ^1D-5s^1D$ (2F)
6193.7	0.42	2.41	2-3	$4d^2\ ^1D-5s^3D$ (3F)
6487.5	0.42	2.32	2-2	
6661.7	0.42	2.27	2-1	
6864.4	0.47	2.27	0-1	$4d^2\ ^1S-5s^3D$ (4F)
9349.2	1.09	2.41	2-3	$4d^2\ ^3P-5s^3D$ (5F)
9543.3	1.03	2.32	1-2	
9671.2	1.00	2.27	0-1	
10034.9	1.09	2.32	2-2	
9926.0	1.03	2.27	1-1	
8921.0	1.03	2.41	1-3	
9307.5	1.00	2.32	0-2	
10458.9	1.09	2.27	2-1	
Zr VI I P 99				
6408.5	0.00	1.93	1½- ½	$4p^5\ ^2P^o-4p^5\ ^2P^o$ (1F)
Xe II I P 21.1				
9487.5	0.00	1.30	1½- ½	$5p^5\ ^2P^o-5p^5\ ^2P^o$ (1F)
Xe III I P 32.0				
10206.5	0.00	1.21	2-1	$5p^4\ ^3P-5p^4\ ^3P$ (1F)
5846.3	0.00	2.11	2-2	$5p^4\ ^3P-5p^4\ ^1D$ (2F)
La II I P 11.38				
11011.70	0.13	1.25	3-2	a^3F-b^1D (1F)
9903.31	0.00	1.25	2-2	
11490.57	0.17	1.25	2-2	a^1D-b^1D (2F)
La III I P 19.1				
8339.72	0.20	1.68	2½- ½	5^3D-6^2S (1F)
7355.92	0.00	1.68	1½- ½	
Eu II I P 11.21				
8983.71	0.00	1.37	4-6	$a^9S-a^9D^o$ (1F)
9392.85	0.00	1.31	4-5	
9694.01	0.00	1.27	4-4	
9916.30	0.00	1.24	4-3	
10074.84	0.00	1.22	4-2	
5929.31	0.00	2.08	4-5	$a^9S-a^7D^o$ (2F)
5879.32	0.00	2.10	4-4	
5832.40	0.00	2.12	4-3	
5796.28	0.00	2.13	4-2	

Part II—Finding List of All Lines in the Table of Multiplets

TABLE OF CONTENTS

Part II. Finding List

	Page
1. Introduction	i
2. Part A—Observed and Permitted Predicted Lines	i
3. Blends	ii
4. Scope	ii
5. Part B—Forbidden Lines	ii
6. Contents of Section on Forbidden Lines	iii
7. Index Card	iii
8. Errata	iii
Finding List	iii
Body of Multiplet Table	1–86
Forbidden Lines	87–96

A MULTIPLET TABLE OF ASTROPHYSICAL INTEREST

PART II

Finding List of All Lines in the Table of Multiplets

1. Introduction

Any arrangement of the wave-lengths in a given spectrum, by multiplets makes it inconvenient to locate a given line. The difficulty is greatly increased when many spectra are involved. Consequently a "Finding List" containing *all* lines in the Revised Multiplet Table has been included as Part II of this Contribution. As in the R M T the Finding List is in two parts. The first contains permitted lines observed in the laboratory, permitted predicted lines, and a few forbidden lines observed in the laboratory when a strong electric field is present. The second contains only forbidden lines of the nebular, auroral and coronal type. See §5.

2. Part A—Observed and Permitted Predicted Lines

The lines are listed in order of increasing wave-length and cover the range λλ2951–13164. At the violet end of this long range, the proportion of known lines included is smaller than in the main body of the list, due to the masking by the ozone in our atmosphere of all but the strongest lines. The number of lines in the same wave-length interval decreases from the violet to the red. The incompleteness of laboratory material accentuates this in the infra-red. The total number of lines in this section is approximately 23,200.

Three entries are given for each line and a fourth if the line is predicted or forbidden. All entries are copied directly from Part I of this Contribution. The first is the laboratory wave-length. The source from which the wave-length is taken can be found from the references A, B, C etc. in the R M T and Table 7.

The second entry headed "Type" is blank for all lines observed in the laboratory, except the selected forbidden ones that appear under special conditions, (due to Stark effect). These are marked "Forb" and include 11 lines of *He* I, 6 of *Na* I, 11 of *Al* II, 2 of *Al* III and 2 of *K* I.

Predicted Lines. These fall into three classes. (a) For some faint lines observed in the laboratory but not well-measured, a predicted wave-length obtained from the spectroscopic term values is preferable to the observed value. (b) It is well-known that many predicted lines not yet observed in the laboratory are important astrophysically, and an attempt has been made to include these in the R M T. (c) If a line that would otherwise be included is masked by a strong line in the laboratory, the predicted position of the masked line is entered. Such cases are carefully noted and explained in the R M T. In every case where a predicted wave-length is used, the entry "P" occurs in the column headed "Type" in the Finding List. This column contains only the two entries "Forb" and "P". All other lines are observed laboratory wave-lengths in the usual sense of the word "observed".

The third entry for each line is the spectrum to which the line belongs. Here the chemical symbols of the elements are used and Roman numerals denote arc spectra (I) and spark spectra in successive stages of ionization, i.e. first spark spectrum (II), second spark spectrum (III) etc.

Finally the number of the multiplet to which the line of a given spectrum belongs, is given under the heading "Multiplet No." This number appears under the "Multiplet Designation" of each multiplet in the R M T and the numbers start with 1 for each spectrum. All lines of a given multiplet have the same multiplet number. A blank in this column indicates that the line is unclassified. In the R M T, under a given spectrum, unclassified lines follow the multiplets.

When two or more numbers appear in this column, the line is a blend and occurs in each of the multiplets indicated.

Examples: λ2957.56 is due to *Cr* II and appears in Multiplets 104 and 141 of *Cr* II (See pp. 44 and 45 of the R M T).

λ2984.89 is a predicted wave-length. The line is in Multiplet No. 60 of *Fe* II (See p. 67 of the R M T).

λ2991.632 is an unclassified line of *Fe* I (See p. 65 of the R M T).

3. Blends

Reference has been made above to a line appearing in two multiplets of a given spectrum, for example λ2957.56. Such blends can be readily detected in the Finding List by the presence of more than one multiplet number. In the R M T they are noted by an asterisk. This applies to blended lines in the same spectrum.

If, however, an arc and spark line of an element are blended the wave-length is repeated in the Finding List; or nearly identical wave-lengths are entered, if different measures were used in the two instances. For example λ2988.952 appears in Multiplet No. 11 of *Sc* I and in Multiplet No. 34 of *Sc* II. In the R M T such lines have an asterisk preceding the wave-length and the symbol "§" following it.

A careful examination of close pairs of lines of a given element in the Finding List will doubtless reveal more blends than have been noted in the R M T. Similarly, it is probable that erroneous identifications of lines due to impurities that have not heretofore been suspected, can be detected.

The predicted wave-lengths of masked lines (§2) fall close to observed lines. For example λ2965.25 is the predicted position of the line of *Fe* I in Multiplet No. 316, masked by the strong *Fe* I line at λ2965.255, which occurs in Multiplet No. 10.

All predicted lines have separate entries in the Finding List, regardless of how close the pairs in a given spectrum may be—for example, λλ2990.33 and 2990.34 are both predicted lines of *Fe* I. If observed in the laboratory these lines would undoubtedly be blended.

When identical wave-lengths appear in spectra of different elements, the lines are arranged in the alphabetical order of the chemical symbol. When similar wave-lengths occur in spectra of different stages of ionization of a given element, the arc spectrum comes first, then the spark spectra, in order of increasing ionization.

4. Scope of the Finding List

The users of this Finding List are emphatically warned that the list is *not complete*. The range is that useful to the astrophysicist, having the violet limit λ2951. Within the range covered, the elements to be included have been selected according to their astrophysical importance. For a given element, the spectra for different degrees of ionization and the lines of each have been similarly selected. It is fairly complete for the first spark spectra through the first long period. It lists only the leading arc lines for many elements, but includes all observed classified lines of *Fe* I. For any element, the List grading in the R M T can be used as a guide to the completeness of selection. On account of these restrictions this book is not a list of "Hauptlinien" or a compendium of wave-lengths of elements in general. On the other hand it does contain a large number of predicted lines which invite the attention of the laboratory worker in spectroscopy.

5. Part B. Forbidden Lines—Nebular, Auroral, Coronal etc.

The second part of the Finding List contains only forbidden lines. Here the word "forbidden" applies in the general sense—i.e. lines due to downward transitions from metastable states in the atoms. The number of lines listed is roughly 2550.

The arrangement is similar to Part A of the Finding List, with the exception that in Part B the great majority of lines are predicted. Consequently no column headed "Type" is given. The wave-lengths that are *not* predicted are noted by the following letters:

N Nebular Wave-length

L Laboratory Wave-length

A Auroral Wave-length

C Coronal Wave-length

Column two contains the chemical symbol and stage of ionization of the spectrum as in Part A, and column three the Multiplet Number. In order to avoid confusion with Multiplet Numbers in Part A, all Multiplets of forbidden lines have the letter "F" accompanying the Multiplet Number.

6. Contents

A complete list of all possible forbidden lines in the region useful to the astrophysicist would be prohibitively long. For simple spectra the lines are few, but for the complex spectra, particularly in the first long period, fairly rigid selection has been made. Anyone desiring to construct complete lists is advised to consult the references to the analysis of the various spectra.

7. Index of The Finding Lists

In order to facilitate the work of transferring from the Multiplet Number of the Finding List to the Multiplet in the R M T, a separate card is enclosed in the Finding List, containing an index of the R M T. The elements are in order of increasing atomic number. This index gives the multiplets of each element contained on each page of the R M T.

For example, λ2980.296 is in Multiplet No. 94 of *Ti* I. On the index card hunt *Ti* I and then this Multiplet Number. It is to be found on page 27 of the R M T, which contains Multiplets of *Ti* I from No. 55 through No. 140.

8. Errata

After the tabular material in the Finding List had been completed for publication, four errors were detected, as follows:

I A	Element	Multiplet No.		I A	Type	Element	Multiplet No.
3497.137	Fe I	78	should read	3497.15	P	Fe I	78
4618.568	Fe I	1151	Reject—Wave-length erroneous				
4061.3	*Sc* III		should read	4061.3		Sc III	1
4068.7	Sc III		should read	4068.7		Sc III	1

The writer will be grateful to those who use this Table if they will call to her attention any errors they detect, so that a list of errata may be published. In the compilation of a list containing about 25,750 lines, doubtless there are a number of mistakes in spite of the care that has been taken to avoid errors.

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
2951.40		Cr II	59	2972.277		Fe I	104	2985.849		Cr I	28
2951.95		Cr II	59	2972.64		Cr II	28	2985.98		S III	14
2952.07		V II	2	2972.742		Gd II	25	2985.995		Cr I	28
2953.358		Cr II	27	2972.769		Fe II	159	2986.137		Cr I	28
2953.706		Cr II	66	2973.137		Fe I	10	2986.456		Fe I	11
2953.774		Fe II	2	2973.236		Fe I	10	2986.473		Cr I	28
2953.940		Fe I	10	2973.975		V II	218	2986.617		Fe II	62
2954.050		Fe II	61	2974.006		Sc I	11	2986.655		Fe I	200
2954.332		V I	18	2974.59		Y I	10	2986.91	P	Fe II	86
2954.67		Cr II	104	2974.78		Fe I	335	2987.074		Gd II	57
2955.12		Cr II	59	2974.934		Ti I	94	2987.166		Co I	11
2955.71		Cr II	58	2975.110		Gd II	77	2987.27	P	Fe II	86
2956.133		Ti I	30	2975.16		Zr II	64	2987.292		Fe I	30
2956.60		Cr II	58	2975.483		Cr I	28	2987.40		Ti II	28
2956.797		Ti I	30	2975.650		V II	28	2987.542		Fe II	223
2957.28		Cr I		2975.89		Hf II	10	2987.65		Si I	1
2957.33		V I	18	2975.938		Fe II	2	2987.72		Ca II	11
2957.365		Fe I	10	2976.126		Fe I	146	2987.80		Zr II	86
2957.520		V II	2	2976.197		V II	28	2988.027		V II	27
2957.56		Cr II	104,141	2976.50	P	Fe I	56	2988.05		Ni II	6
2958.20		Cr II	49	2976.517		V II	28	2988.056		Cr II	28
2958.528		Fe II	160	2976.593		Ru II	4	2988.367		Rh II	3
2958.54		Cr II	97	2976.61		Zr II	77	2988.468		Fe I	56
2959.601		Fe II	62	2976.718		Cr II	27	2988.61		Ca III	2
2959.841		Fe II	180	2976.905		Ce II	168	2988.649		Cr I	14
2959.97		Cr II	59	2976.922		Fe I	334	2988.74		Zr II	148
2959.992		Fe I	316	2977.226		Ru II	4	2988.942		Fe I	316
2960.303		Fe I	148	2977.539		V I	18	2988.952		Sc I	11
2960.926		Gd II	25	2978.07		Zr II	14	2988.952		Sc II	34
2961.119		Fe II	180	2978.18		Y II	45	2989.01	P	Fe II	86
2961.272		Fe II	2	2978.226		V II	87	2989.079		Fe II	159
2961.732		Cr II	27,59	2978.850		Fe II	69	2989.194		Cr II	28
2962.11		Fe I	57	2979.05		A II	19	2989.30		Ca III	4
2962.167		Rh II	4	2979.086		Fe II	100,180	2989.306		V II	87
2962.772		V I	18	2979.102		V II	44	2989.367		Fe II	86
2962.936		Fe II	160	2979.18		Zr II	14	2989.42		Ca II	11
2963.249		V II	154	2979.199		Ti II	123	2989.590		Co I	13
2963.46		Cr II	58	2979.349		Fe II	2	2989.594		V II	28
2963.605		Gd II		2979.382		Rh II	4	2989.731		Fe II	86
2963.73		Cr I		2979.683		Sc II	44	2989.74		V II	87
2963.897		Fe II		2979.726		Ru II	5	2990.10		Zr II	27
2964.131		Fe II	60	2979.741		Cr II	28	2990.16		Ti II	123
2964.629		Fe II	8	2979.957		Ru II	4	2990.33	P	Fe I	334
2964.88		Hf I	4	2980.154		Gd II	12	2990.34	P	Fe I	460
2964.96		Y I	11	2980.296		Ti I	94	2990.392		Fe I	316
2965.036		Fe II	8	2980.532		Fe I	317	2990.873		Ce II	72
2965.19		Cr II	58,160	2980.60	P	Fe I	201	2990.948		V I	58
2965.231		Ti I	94	2980.69		Y II	54	2991.095		Ni I	14,80
2965.25	P	Fe I	316	2980.752		Sc I	11	2991.244		Fe II	60
2965.255		Fe I	10	2980.791		Cr I	28	2991.33		Eu II	3
2965.395		Fe II	59	2980.82		Hf I	2	2991.40		Zr II	6
2965.428		Gd II	29	2980.963		Fe II	61	2991.520		Gd II	25
2965.54		Ta I	2	2981.02		Zr II	24	2991.626		Ru II	5
2965.564		Ru II	4	2981.200		V II	87	2991.632		Fe I	
2965.68		Ti I	94	2981.446		Fe I	11	2991.817		Fe II	160
2965.707		Ti I	94	2981.448		Ti I	29	2991.886		Cr I	28
2965.86		Sc I	11	2981.651		Ni I	26	2992.11		O III	10
2966.051		Cr II	33	2981.852		Fe I	104	2992.24		K III	2
2966.26		Fe I	104	2981.924		V II	114	2992.378		V II	114
2966.27		Zr II	148	2982.059		Fe II	139	2992.40		Cr II	28
2966.901		Fe I	10	2982.100		Cb II	2	2992.595		Ni I	25
2967.225		Ti I	30	2982.234		Fe I	460	2992.63		C II	8
2967.642		Cr I	28	2982.239		Fe II	70	2993.038		Gd II	42
2968.119		Fe II	160	2982.75		V II	28	2993.366		Fe II	139
2968.21		Cr II	96	2982.78		Cl II	53	2994.05		Zr II	
2968.231		Ti I	29	2983.009		V II	22,28	2994.069		Cr I	14
2968.373		V II	28	2983.060		Gd II	77	2994.259	P	Al II	14
2968.67		Cr II	58	2983.306		Ti I	29	2994.427		Fe I	9
2968.738		Fe II	61	2983.558		V II	28	2994.460		Ni I	27
2968.82		Hf II	12	2983.574		Fe I	9	2994.50		Fe I	11
2968.906		Fe II		2983.66		O III	7	2994.540		V II	218
2968.95		Zr II	14	2983.78		O III	6	2994.725		Cb II	
2969.267		Gd II	28	2984.131		Ni I	12	2994.737		Cr II	28
2969.364		Fe I	11	2984.183		Na II	2	2994.958		Ca I	17
2969.474		Fe I	30	2984.25		Y I	10	2995.10		Cr I	15
2969.67		Cr II	66	2984.35	P	Ti II	28	2995.26		Y I	11
2969.934		Fe II	70	2984.69		Cr II	27	2995.530	P	Al II	14
2970.106		Fe I	10,11	2984.785		Fe I	29	2995.546	P	Al II	14
2970.35		Si I	1	2984.82		Cr I	15	2995.644		Ce II	183
2970.384		Ti I	29	2984.831		Fe II	8	2995.838		Fe I	460
2970.510		Fe II	2	2984.89	P	Fe II	60	2995.999		V II	27
2970.556		Ti I	94	2985.02		Cr II	56	2996.386		Fe I	148
2970.66		Cr II	57	2985.184		V II	218	2996.51		O III	10
2970.682		Fe II	69	2985.29	P	Fe II	69	2996.549		Co I	77
2971.112		Cr I	28	2985.325		Cr II	28	2996.580		Cr I	28
2971.616		Fe II	60	2985.36		Zr I	22	2996.63		Cl II	22
2971.906		Cr II	28	2985.43		La II	145	2996.70		V II	28
2972.016		Fe II	160	2985.477		Ti I	29	2996.88	P	Ti II	28
2972.17		Gd II	77	2985.521		Gd II	77	2996.94		Y I	9
2972.263		V II	87	2985.545		Fe II	8	2997.08		V I	116

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
2997.298		Fe II	139	3006.82		O II		3015.67		Zr II	86
2997.309		Ca I	17	3006.858		Ca I	17	3015.686		Co I	76
2997.364		Cu I	5	3006.86		N II	18	3015.86		Zr II	127
2997.749		Fe II	85	3006.90		V I	116	3015.913		Fe I	198
2997.71		O III	10	3006.95	P	Fe III	21	3015.98		V II	42
2997.87		V I	116	3006.98		Cl II	53	3016.14		V II	26
2997.945		V II	141	3007.035		V II	141	3016.15		A IV	1
2997.97		Pt I	3	3007.071		Na II	12	3016.16		V I	58
2998.158	P	Al II	14	3007.08		O II	74	3016.186		Fe I	30
2998.163	P	Al II	14	3007.146		Fe I	55	3016.454		Mn I	35
2998.34		Zr II	13	3007.2		Fe III	116	3016.775		V II	27
2998.49		Zr II	86	3007.284		Fe I	11	3016.94		Hf II	3
2998.787		Cr I	14	3007.296		V II	27	3017.187		Ti II	85
2998.855		Fe II	60	3007.32		La II	102	3017.195		Ce II	107
2998.896		Ru II	5	3007.442		Na II	1	3017.254		Co I	78
2999.045		Gd II	12	3007.487		Ti I		3017.34		Ne II	8
2999.238		V I	58	3007.655		Mn I	35	3017.447		W I	9
2999.30		Cr II	33	3007.74		O II	74	3017.548		Co I	11
2999.512		Fe I	30	3007.75	P	Fe I	262	3017.569		Cr I	27
2999.641		Ca I	17	3007.802		Fe III	10	3017.628		Fe I	9
2999.92	P	Ti II	28	3007.975		Nd II		3017.63		O III	10
2999.96		Cr II	42	3008.13		Zr II	86	3017.80		Cr II	95
3000.059		Fe II	69	3008.139		Fe I	9	3018.08		Zr II	
3000.09		Hf II	3	3008.265		Mn I	35	3018.134		Fe I	199
3000.14		A II		3008.28		O II	74	3018.25	P	Fe I	263
3000.45		A II	72	3008.322		Ti II	85	3018.32		Hf I	2
3000.452		Fe I	56	3008.506		Fe III	9	3018.352		Zn I	5
3000.545		Co I	13	3008.508		V II	141	3018.496		Cr I	26
3000.59		Zr II	147	3008.610		V II	26	3018.53		Zr II	147
3000.836		Fe III	10	3008.67		Cr II	75	3018.744		Fe III	10
3000.863		Ca I	17	3008.789		Ce II	122	3018.82		Cl II	22
3000.868		Ti I	29	3008.79		O III	10	3018.821		Cr I	26
3000.890		Cr I	28	3008.996		Rh II	4	3018.95		La II	
3000.950		Fe I	9	3009.098		Fe I	198	3018.983		Fe I	30
3001.203		V II	27	3009.136		Sn I	1	3019.09		V II	86
3001.42		Y II	53	3009.138		Na II	13	3019.143		Ni I	11
3001.589		Fe III	9	3009.205		Ca I	17	3019.291		Fe I	199
3001.65		Ne II	4	3009.366		Gd II	25	3019.350		Sc I	10
3001.66	P	Fe I	506	3009.570		Fe I	30	3019.819		Rh II	3
3001.754		V II	141	3009.650		Gd II	27	3019.84		Zr II	6
3001.90		V I	116	3009.85		Zr II	64	3020.001		Fe II	110
3001.93		V II	43	3009.998		Fe III	41	3020.45		Zr II	26
3002.09	P	Fe II	138	3010.129		Gd II	12	3020.495		Fe I	9
3002.197		Gd II	77	3010.220		Fe II	181	3020.54		Hf I	4
3002.330		Fe II	98	3010.28		Zr II	39	3020.643		Fe I	9
3002.442		V I		3010.42	P	Ti I	170	3020.65		V II	26
3002.491		Ni I	26	3010.76		W II	14	3020.673		Cr I	27
3002.65		V I	47	3010.838		Cu I	3	3021.074		Fe I	9
3002.650		Fe II	8	3010.899		Gd II	42	3021.407		Fe II	59
3002.66		Pd I	4	3011.060		Fe III	31	3021.558		Cr I	27
3002.710		Gd II	77	3011.162		Mn I	35	3021.74		Pd I	6
3002.728		Ti I	29	3011.24		Hf II	64	3021.74		Y I	9
3002.860		Gd II		3011.376		Mn I	35	3021.78		V I	75
3002.99		Fe III	9	3011.42		Cr II	27	3021.97		Zr II	39
3003.00		A II		3011.482		Fe I	316	3021.98		W II	6
3003.031		Fe I	30	3011.73		Zr I	22	3022.00		Fe III	76
3003.282		Fe III	89	3012.004		Ni I	41	3022.146		V II	86
3003.37	P	Ti II	28	3012.01		Cr II	87	3022.26		La II	116
3003.461		V II	27	3012.020		V II	43	3022.28		Y I	10
3003.583		Gd II	25	3012.190		Gd II	29	3022.57		V II	26
3003.629		Ni I	26	3012.34		Cr II	42	3022.736		Ce III	5
3003.73		Zr II	26	3012.59	P	Fe II	69	3022.749		Mn I	35
3003.924		Cr II	33	3012.847		Fe III	10	3022.804	P	Al II	13
3004.109		Fe III	21,41	3012.90		Hf II	4	3022.820		Ti II	126
3004.119		Fe I	199	3013.030		Cr I	26	3022.93		Cl II	57
3004.249		Fe II	69	3013.102		V II	26	3023.45		O III	4
3004.35		O III	10	3013.125		Fe III	9	3023.50		Y II	79
3004.39		Cl II	22	3013.32		Zr II	27	3023.583		Fe I	103
3004.47		Cr II	88	3013.37		O II	56	3023.80		N II	35
3004.48	P	Fe I	105	3013.38	P	Fe II	138	3023.85		Fe III	10
3004.490		Fe III	41	3013.592		Co I	10	3023.859		Fe II	84
3004.62		Fe I	57	3013.66		Zr II	52	3023.86		Ti II	126
3004.68		La II		3013.713		Cr I	26	3023.882		V II	41
3004.824		V I	47	3013.802		Fe II	124	3024.033		Fe I	11
3005.057		Cr I	28	3014.120		Fe I	458	3024.05		A III	4
3005.092		Gd II		3014.165		Nd II		3024.098	P	Al II	13
3005.26		Y I	9	3014.176		Fe I	31	3024.114	P	Al II	13
3005.302		Fe I	199	3014.37		V I	116	3024.350		Cr I	26
3005.36		Zr I	38	3014.44		Zr I	21	3024.36		O III	10
3005.50		Zr I	60	3014.49		A II	72	3024.400		Co I	52
3005.62		O II		3014.668		Mn I	35	3024.51		W II	4
3005.766		Co I	77	3014.760		Cr I	27	3024.57		O III	4
3005.813		V II	86	3014.822		V II	27	3024.681		Cr I	117
3006.0		Y II	54	3014.915		Cr I	27	3024.72		Zr II	147
3006.04		O II		3015.194		Cr I	27	3024.78		Hf II	47
3006.05		Cl II	22	3015.230		Fe III	9	3024.92	P	Fe II	138
3006.122		Fe III	21	3015.296		Tm II	8	3024.981		V II	85
3006.24		V I	116	3015.364		Sc I	10	3025.16		Zr II	86
3006.35		V I	75	3015.400		Na II	5	3025.283		Fe I	29
3006.502		V II	141	3015.510		Cr II	87	3025.29		Hf II	12

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3025.40	P	Cr I	27	3034.95		Cb II		3044.567		Mn I	15
3025.638		Fe I	198	3034.99		Cr II	42	3044.843		Fe II	98
3025.68		V II	75	3035.013		Rh II	4	3044.936		V I	17
3025.70		Zr II	76	3035.14		V II	245	3045.00		Cl II	21
3025.75		O II	84	3035.25	P	Fe I	506	3045.006		Ni I	12
3025.843		Fe I	9	3035.43		O III	4	3045.077		Fe I	29
3025.99	P	Fe II	84	3035.781		Zn I	5	3045.085		Ti II	
3026.18		Zr II	147	3035.802		Fe III	30	3045.313		Fe II	179
3026.373		Co I	77	3035.98		Ne II	17	3045.36		Y I	9
3026.462		Fe I	30	3036.07		V II	40	3045.53		Cr II	48
3026.47		Y II	44	3036.101		Cu I	5	3045.58		Ne II	8
3026.647		Cr II	95	3036.33	P	Zr II	86	3045.593		Mn I	34
3026.75		A II	120	3036.39		Zr II	25	3045.593		Na II	11
3026.776	P	Al II	13	3036.50		Zr II	24	3045.594		Fe I	198
3026.781	P	Al II	13	3036.59		Y II	68	3045.714		Sc II	37
3026.85		Cr II	41	3036.68		W II	7	3045.808		Mn I	34
3026.985		Fe III	21	3036.784		Ti II	78	3045.82		Zr I	36
3027.04		Ne II	8	3036.986		Fe II	181	3045.877		Fe III	76
3027.38	P	Fe II	99	3037.044		Cr I	27	3046.03		Hf II	32
3027.46		Fe III	10	3037.26		Si III	10	3046.10		A II	
3027.600		V II	85	3037.388		Fe I	9	3046.266		Mn II	10
3027.602		Gd II	12	3037.73		Ne II	8	3046.399		Fe III	78
3027.75		Y II	60	3037.731		Ce II	181	3046.452		W I	5
3027.92		Pd I	5	3037.782		Fe I	31	3046.675		Fe II	179
3028.04		O IV	5	3037.935		Ni I	25	3046.685		Ti II	47
3028.042		V II	85	3037.98		A IV	2	3046.714		Fe III	92
3028.05		Zr II	76	3037.98		Cl II	53	3046.819		Fe I	315
3028.125		Cr II	87	3038.00		V II	246	3046.929		Fe I	198
3028.436		Cb II	2	3038.04		Cr II	154	3047.035		Mn I	34
3028.608		Rh II	1	3038.52		Cr II	41	3047.047		Fe I	457
3028.66		Ca III	3	3038.520		V II	96	3047.119		Fe III	80
3028.82		O II	73	3038.59		Zr II		3047.13		O III	4
3028.84		Ne II	4	3038.706		Ti II	85	3047.160		Rh II	4
3028.93		A II	84	3038.777		Fe II	84	3047.201		Fe I	382
3028.981		Gd II	26	3039.064		Ge I	2	3047.455		Cr I	164
3029.041		Mn II	10	3039.254		F III	3	3047.57		Ne II	8
3029.164		Cr I	26	3039.322		Fe I	199	3047.60	P	Fe II	84
3029.237		Fe I	56	3039.51		O II	72	3047.605		Fe I	9
3029.297		Ni I	56	3039.551		Mn II	10	3047.63		Cr II	15
3029.52		Zr I	22	3039.563		Co I	52	3047.76		Cr II	15
3029.56		V II	26	3039.65		Ne II	17	3047.9		O II	82
3029.681		Fe II	124	3039.67		C II	29	3048.108		Co I	77
3029.730		Ti II	85	3039.74	P	Cr I	117	3048.214		V II	123
3029.83		Sb I	2	3039.746		F III	3	3048.28		Zr II	144
3030.149		Fe I	198	3039.76		O II	72	3048.42		Zr II	65
3030.214		Y II	79	3039.767		V II	153	3048.65		V II	67
3030.245		Cr I	27	3039.780		Cr I	26	3048.766		Ti II	78
3030.61	P	Fe I	145	3039.92		Sc II	47	3048.864		Mn I	34
3030.757		Fe I	459	3040.34		Gd II	55	3048.888		Co I	11
3030.769		Sc I	10	3040.428		Fe I	30	3048.891		V II	40
3030.85		Ne II	17	3040.603		Mn I	34	3049.011		Fe II	181
3030.91		Zr II	6	3040.812		Co I	50	3049.027		Mn II	21
3031.007		V I	74	3040.829		Fe II	123	3049.18	P	Fe II	109
3031.16		Hf II	11	3040.846		Cr I	27	3049.39		La II	115
3031.213		Fe I	198	3040.92		Cr II	65	3049.44		C II	43
3031.353		Cr I	27	3040.93		Si III	10	3049.694		W I	9
3031.486		Cr I	117	3041.224		Mn I	34	3049.883		Cr I	27
3031.559		Ce III	1	3041.278		Al II	28	3050.073		Al I	7
3031.63		Cr II	87	3041.42		V II	40	3050.137		Cr II	65
3031.63	P	Fe II	138	3041.639		Fe I	56	3050.400		V I	74
3031.638		Fe I	30	3041.74		Cr II	95	3050.463		Fe III	10
3031.870		Ni I	11	3041.745		Fe I	30	3050.496		Co I	77
3032.00		Zr II	144	3041.86		V I		3050.5		Y II	69
3032.08		O II	83	3041.876		W I	5	3050.57		Ne II	48
3032.187		V II	75	3042.020		Fe I	30	3050.661		Mn II	21
3032.44		Ni II	3	3042.27		V II	40	3050.735		V II	66
3032.50		O II	83	3042.481		Co I	10	3050.75		Cr II	95
3032.767		Cb II		3042.65		Pt I	5	3050.819		Ni I	25
3032.845		Gd II	12	3042.666		Fe I	30	3050.890		V I	16
3032.85		As I	1	3042.733		Mn I	34	3050.932		Co I	51
3032.927		Cr II	15	3042.79		Cr II	47	3051.30		W II	6
3033.104		Fe I	146	3043.02		O III	4	3051.308		V II	228
3033.445		Fe II	181	3043.067		Fe III	91	3051.924		Ce II	184
3033.445		V II	123	3043.124		V I	17	3051.975		Ce II	180
3033.52		A II	19	3043.132		Mn II	21	3052.07		K III	2
3033.591		Mn II	21	3043.143		Mn I	34	3052.194		V I	15
3033.821		V II	34	3043.31	P	Fe II	138	3052.229		Cr I	164
3034.05		Cr II	74	3043.356		Mn I	34	3052.511		Gd II	9
3034.051		Gd II	12	3043.439		Fe III	91	3052.54		O IV	5
3034.120		Sn I	1	3043.54		V II	40	3052.78	P	Fe I	262
3034.190		Cr I	26	3043.555		V I	17	3052.929		Sc II	37
3034.32		O III	20	3043.770		Mn I	34	3053.065		Fe I	146
3034.432		Co I	12	3043.851		Ti II	78	3053.20		A II	
3034.48		Ne II	8	3043.90		Cr II	48	3053.27		Y II	68
3034.51		Fe I	57	3044.004		Co I	11	3053.39		V II	34
3034.54		Cr II	33	3044.04	P	Co I	78	3053.443		Fe I	31,398
3034.54		F III	3	3044.12		Zr II	26	3053.570		Gd II	25
3034.712		Fe II	84	3044.16		Ne II	17	3053.65		Cr II	64
3034.74		Si III	10	3044.24		Cr II	154	3053.65		V I	17
3034.810		Mn II	21	3044.438		Fe III		3053.664		Na II	15

I A	Type	Element	Multiplet No.
3053.74		Cl II	14
3053.880		Cr I	26
3053.894		V II	40
3054.02		La II	115
3054.134		Fe III	10
3054.24		V II	67
3054.316		Ni I	25
3054.362		Mn I	15
3054.39		Zr II	51
3054.52		Hf II	8
3054.69		Ne II	8
3054.694		Al I	7
3054.724		Co I	13
3054.82		A III	4
3054.84		Zr II	76
3054.89		V I	16
3054.94		Eu II	7
3054.949		Fe I	263
3055.243		Ce II	201
3055.263		Fe I	55
3055.3		Y II	68
3055.368		Fe II	181
3055.43		Hf II	56
3055.44		Cr II	33
3055.55		Fe III	10
3055.585		Ce III	1
3055.942		V II	123
3056.157		Na II	1
3056.334		V I	17
3056.556		Ce III	9
3056.68		Cr II	48
3056.740		Ti II	47
3056.775		Ce II	121
3056.802		Fe II	109
3056.84		K III	2
3057.08		V II	95
3057.155		Al I	7
3057.214		Ce III	8
3057.22		Zr II	76
3057.395		Ti II	5
3057.446		Fe I	28
3057.575		Ce III	4
3057.638		Ni I	26
3057.80	P	Fe I	29
3057.86		Cr II	65
3058.00		Cl II	14
3058.090		Ti II	47
3058.119		Gd II	57
3058.17		Cr I	164
3058.38		Cr II	48
3058.66		Os I	1
3058.68		O V	6
3059.047		Al I	7
3059.064		Mn II	21
3059.086		Fe I	9
3059.16		Ne II	17
3059.24		C II	47
3059.30		O III	4
3059.41		Cr II	15
3059.521		Cr II	15
3059.741		Ti II	5,47
3059.91		La II	147
3060.023		Fe II	109
3060.048		Co I	77
3060.11		Zr II	6
3060.162		Fe III	92
3060.252		Ru II	6
3060.460		V I	17
3060.531		Sc II	37
3060.545		Fe I	457
3060.63		Cr I	164
3060.93		V I	15
3060.94		A II	
3060.984		Fe I	55
3061.14	P	Cr II	103
3061.33		Zr II	6
3061.59		Cr II	41
3061.652		Cr I	55
3061.822		Co I	11
3061.983		Co I	52
3062.119		Mn I	15
3062.178		V II	113
3062.199		Co I	12
3062.201		Rh II	4
3062.234		Fe II	108
3062.702		V II	34
3062.872		Fe I	456
3063.010		Ce II	185
3063.149		Fe I	102
3063.247		V II	123
3063.25		Co I	50
3063.280		Ti II	119
3063.411		Cu I	4
3063.46		O IV	1
3063.502		Ti II	47
3063.56		Ta I	4
3063.58		Zr I	36
3063.63		Zr II	
3063.734		V I	16
3063.814		Fe II	
3063.84		Cr II	32
3063.93		Ni II	3
3063.939		Fe I	147
3064.302		Al I	7
3064.370		Co I	13
3064.372		Na II	6
3064.530		Cb II	
3064.623		Ni I	26
3064.64		Zr II	25
3064.68		Hf II	31
3064.71		Pt I	2
3064.77		A III	4
3065.01		O III	26
3065.067		Cr I	184
3065.106		Sc II	37
3065.20		Zr II	5
3065.30		Pd I	3
3065.315		Fe II	97
3065.61		V II	112
3066.019		Mn I	15
3066.02		Y II	68
3066.158		Al I	7
3066.220		Ti II	5
3066.354		Ti II	5
3066.375		V I	17
3066.487		Fe I	313
3066.51		V I	17
3066.514		Ti II	47
3066.536		Na II	18
3066.69	P	Fe I	456
3066.80		V II	123
3066.92		A II	
3067.104		V II	34
3067.123		Fe I	56
3067.132		Ge I	5
3067.18		Cr II	15
3067.22	P	Cr I	55
3067.23	P	Cr II	15
3067.244		Fe I	28
3067.41		Hf I	4
3067.712		Bi I	1
3067.952		Fe I	315a
3068	P	O VI	2
3068.02		Zr II	5
3068.06		O II	26
3068.175		Fe I	55
3068.32		Zr II	
3068.643		Gd II	12
3068.68		O III	26
3068.757		Fe II	122
3068.897		Ir I	6
3068.927		Fe I	53
3069.26		Y II	43
3069.335		Fe III	1
3069.645		V I	15
3070.072		Fe III	30
3070.12		V II	228
3070.266		Mn I	15
3070.591		Fe II	83
3070.692		Fe II	68
3071.03		Cr II	41
3071.08		Ne II	17
3071.141		Fe II	181
3071.238		Fe III	1
3071.242		Ti II	47
3071.270		Fe II	
3071.35		Cl II	14
3071.58		Cr II	47
3071.583		Ba I	4
3071.653		Fe II	123
3071.66		O IV	1
3071.69	P	Cr I	55
3071.77		V II	250
3071.957		Co I	12
3072.062		Zn I	5
3072.107		Ti II	5
3072.341		Co I	11
3072.47		Cr II	32,116
3072.54		Ti II	119
3072.565		Gd II	93
3072.664		Co I	125
3072.68		Ne II	17,48
3072.88		Hf I	2
3072.971		Ti II	5
3073.126		Mn I	15
3073.244		Fe I	549
3073.25		Cr II	47
3073.520		Co I	51
3073.679		Cr I	184
3073.823		V I	15,17
3073.982		Fe I	313
3074.061		Rh II	1
3074.15		O III	26
3074.157		Fe I	457
3074.334		Na II	9
3074.47		Cr I	55
3074.55		Zr II	105
3074.66		V II	112
3074.665		Al II	27
3074.67		Cr II	73
3074.68		O III	26
3074.91		Cr II	73
3075.043		V II	228
3075.19		O III	26
3075.225		Ti II	5
3075.228		Fe II	68
3075.269		V I	105
3075.32		As I	1
3075.336		Ru II	7
3075.38		Sc II	37
3075.380		Nd II	
3075.422		Gd II	56
3075.474		V II	67
3075.55		Zr II	144
3075.58		V II	228
3075.721		Fe I	28
3075.901		Zn I	1
3075.933		V I	57
3075.95		O III	26
3076.016		V II	34
3076.455		Fe II	181
3076.58		Cr I	55
3076.864		Cb II	2
3076.925		Gd II	10
3077.077		Gd II	25
3077.14		Y II	52
3077.168		Fe II	108
3077.24		Cr II	103
3077.24		Ta I	1
3077.358		Eu II	3
3077.40		A IV	1
3077.59		Lu II	4
3077.79		Cr II	103
3077.831		Cr I	184
3078.014		Fe I	29
3078.15		A III	4
3078.315		Na II	2,8
3078.436		Fe I	146
3078.44	P	Fe II	97
3078.64		Y II	78
3078.645		Ti II	5
3078.698		Fe II	181
3078.948		V II	66
3079.34		Cr II	102
3079.356		Fe II	122
3079.394		Co I	10,49
3079.627		Mn I	15
3079.75		V II	113
3079.84	P	Fe I	102
3080.146		V I	15
3080.333		V I	57
3080.405		Fe II	108
3080.64		Hf II	63
3080.72		Cr I	184
3080.755		Ni I	26
3080.84		Hf I	4
3081.01		V II	112
3081.254		V II	66
3081.30		V II	164
3081.330		Mn I	15
3081.42		La II	115
3081.46		O II	
3081.575		Ti II	119
3081.585		Rh II	5
3081.600		Y II	50
3081.83	P	Fe I	53
3081.993		Gd II	12
3082.010		V I	105
3082.052		Mn I	15
3082.109		V I	17

I A	Type	Element	Multiplet No.
3082.159		Al I	3
3082.16		Y II	68
3082.304		Ce II	105
3082.524		V II	39
3082.56		Sc II	36
3082.614		Co I	10
3082.844		Co I	73
3082.99		A II	120
3083.024		Fe II	97
3083.07	P	Sc II	37
3083.152		Fe I	197
3083.208		V II	112
3083.350		Gd II	10
3083.539		V I	57
3083.62		Cr II	47
3083.65		O III	26
3083.670		Ce II	237
3083.68	P	Fe III	39
3083.742		Fe I	28
3084.007		Gd II	
3084.09		Fe III	40
3084.46		Cr II	71
3084.59		Cr I	184
3084.63		O III	26
3084.819		Ti I	93
3085.05		A II	
3085.089		Ce III	4
3085.34		Zr I	20
3085.36		Cr II	47
3085.47		V II	34
3085.621		Gd II	10
3086.210		V II	66
3086.225		Si III	1
3086.311		Fe III	
3086.393		Co I	50
3086.429		Si III	1
3086.44		Zr II	24
3086.507		V II	39
3086.620		Si III	1
3086.777		Co I	11
3086.83		Co I	76
3086.858		Y II	42
3086.880		Fe III	81
3087.02		Al I	19
3087.065		V I	57
3087.07		Ni II	7
3087.659		Fe III	77
3087.806		Co I	77
3087.90		Cr II	102
3088.027		Ti II	5
3088.04		O III	26
3088.114		V I	56
3088.23		Ne II	24
3088.24		A II	119
3088.28		Zr II	38
3088.523		Al II	20
3089.00		Zr II	25
3089.130		V I	37
3089.204		Gd II	54
3089.388		Fe II	158
3089.401		Ti II	90
3089.596		Co I	10
3089.633		V II	112
3089.649		Fe III	40
3089.75		Cr II	195
3089.954		Gd II	93
3090.051		Ti II	119
3090.137		Ti I	93
3090.209		Fe I	313
3090.251		Co I	77
3090.40		V I	15
3090.44		Zr I	54
3090.772		Fe III	20
3090.94		Cr II	126
3091.076		Mg I	5
3091.30		Zr II	38
3091.437		V I	15
3091.552		V I	15
3091.578		Fe I	28
3091.70		Y I	
3092.058		Gd II	93
3092.22		Cl II	14
3092.26		Hf II	30
3092.519		Sc II	36
3092.716		Al I	3
3092.72		V I	
3092.729		Na II	1
3092.785		Fe I	28
3092.843		Al I	3
3092.91		Ne II	44
3092.915		Nd II	
3092.997		Mg I	5
3093.108		V II	1
3093.16	P	V II	39
3093.24		V I	15
3093.41		A II	84
3093.423		Si III	1
3093.48		Cr II	125
3093.481		Rh II	4
3093.53	P	Fe I	102
3093.613		Si III	1
3093.76		Y II	78
3093.792		V I	57
3093.806		Fe I	55
3093.846		Gd II	10
3093.888		Fe I	261
3093.97		Cr II	47
3093.989		Cu I	3
3094.08	P	Fe I	165
3094.08		Ne II	24
3094.156		Fe III	78
3094.172		Cb II	1
3094.196		V II	39
3094.555		Ru II	3
3094.692		V I	56
3094.79		Zr I	36
3094.870		Fe I	315a
3094.94		Cr II	47,86
3094.98		A II	118
3095.07		Zr II	5
3095.22		Cr II	86
3095.270		Fe I	314
3095.716		Co I	49
3095.81		O III	26
3095.82		Zr I	36
3095.859		Cr I	
3095.88		Y II	11
3095.902		V I	57
3096.11		Cr II	126
3096.296		Fe II	97
3096.402		Co I	52
3096.424		Ti II	77
3096.531		Cr I	
3096.72		Cl II	31
3096.740		Rh II	4
3096.77	P	Sc II	6
3096.786		Si III	1
3096.86		Fe III	65
3096.902		Mg I	5
3097.063		Mn I	
3097.118		Ni I	11
3097.15		Ne II	44
3097.186		Ti II	67
3097.415		Fe II	96
3097.45		Eu II	6
3097.46		S IV	1
3097.49	P	Fe I	165
3097.626		Ti II	77
3098.16		Cr II	86
3098.191		Fe I	313
3098.194		Co I	10
3098.476		Nd II	
3098.597		Tm II	8
3098.644		Gd II	11
3098.88		Cr II	86
3098.899		Gd II	10
3098.93	P	Fe III	51
3099.05		Fe III	65
3099.115		Ni I	13
3099.180		Cb II	2
3099.22		Zr II	5
3099.667		Co I	75
3099.898		Fe I	28
3099.968		Fe I	28
3099.97		A II	
3100.304		Fe I	28
3100.31	P	Fe III	51
3100.48	P	Fe III	29
3100.504		Gd II	12
3100.666		Fe I	28
3100.666		Ti I	92,93
3100.838		Fe I	196a
3100.938		V II	39
3101.003		Fe I	313
3101.185		Gd II	93
3101.39		Hf II	12
3101.407		Gd II	76
3101.52	P	Ti II	58
3101.526		Ti I	181
3101.554		Ni I	25
3101.557		Mn I	
3101.77		Ti I	181
3101.879		Ni I	40
3101.911		Gd II	10
3102.295		V II	1
3102.36		Ca I	16
3102.405		Co I	49
3102.517		Ti I	191
3102.55	P	Fe III	29
3102.551		Gd II	76
3102.58		Cr II	116
3102.63		A II	
3102.64	P	Fe I	29
3102.71		Fe I	
3102.975		Ti II	58
3103.3		Y II	78
3103.377		Ce II	151
3103.48		Cr II	71
3103.60		V I	56
3103.735		Co I	73
3103.804		Ti II	90
3103.983		Co I	48
3103.994		V I	56
3104.29		Cr II	102
3104.38		A II	118
3104.396		Na II	17
3104.46		Cl III	3
3104.58		La II	17
3104.593		Ti II	90
3104.70		Cr I	163
3104.713		Mg II	6
3104.805		Mg II	6
3104.82		Y II	59
3104.906		V II	39
3105.084		Ti II	67
3105.166		Fe II	82,122
3105.220		Ti I	181
3105.469		Ni I	12
3105.548		Fe II	82
3105.57		Cr I	163
3105.929		Co I	21
3105.973		V II	140
3106.11		V I	56
3106.234		Ti II	67
3106.542		Fe I	196
3106.559		Fe II	68
3106.58		Zr II	63
3106.806		Ti I	92
3106.829		V II	139
3106.974		Ce III	4
3107.044		Co I	49
3107.142		V I	57
3107.387		Sc II	6
3107.388		Ca I	16
3107.468		Ti I	181
3107.529		Sc II	33
3107.540		Co I	125
3107.58		Cr II	125
3107.586		Ru II	3
3107.714		Ni I	12
3107.774		Mn I	38
3107.950		Fe III	29
3108.230		Gd II	54
3108.36		Zr I	38
3108.360		Gd II	93
3108.46		La II	16
3108.511		Sc II	36
3108.635		Mn I	38
3108.66		Cr II	55
3108.704		V II	39
3108.78	P	Fe III	29
3108.82		A II	18
3108.85		Fe III	12
3108.927		Ti II	77
3109.05		Fe I	165
3109.11		Hf II	10
3109.3		Y II	57
3109.32		Fe III	8
3109.336		Cr I	163
3109.375		V II	186
3109.506		Co I	50
3109.59		Fe III	1
3109.75		A II	
3109.92	P	Ti II	58
3110.021		Co I	109
3110.052		Fe III	39
3110.07		V II	139
3110.095		Ti II	77
3110.278		Ce II	152
3110.516		Ce III	4

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3110.52		Zr II	105	3119.60		As I	1	3128.640		Ti II	121
3110.620		Ti II	67	3119.66		Ca III	4	3128.686		V II	83
3110.65		Y II	50,78	3119.660		Fe II		3128.699		Cr II	5
3110.708		V II	1	3119.706		Cr I	183	3128.789		Y II	51
3110.821		Co I	11	3119.725		Ti I	137	3128.79		Zr II	38
3110.85		Fe III	29	3119.800		Ti II	67	3128.901		Fe I	54
3110.860		Cr I	163	3119.82		Cl II	20	3129.013		Fe II	96
3110.87		Hf II	46	3119.837		Rh II	8	3129.04		Fe III	8
3110.87		Zr II	5	3119.941		Gd II	11	3129.075		Ti I	192
3111.15		Zr II	24	3120.023		Fe II	96	3129.16		Zr II	23
3111.283		Ti I	181	3120.03	P	Fe I	161	3129.18	P	Fe I	161
3111.339		Co I	73	3120.03		Fe III	29	3129.314		Ni I	12
3111.609		Fe III	8	3120.10		Co I	74	3129.334		Fe I	52
3111.686		Fe I	260	3120.181		Gd II	76	3129.368		Na II	2
3111.95		Cr II	55	3120.24		Fe III	1	3129.44		O II	14
3112.05		Y II	4	3120.371		Cr II	5	3129.481		Co I	74
3112.050		Ti II	67	3120.435		Fe I	194	3129.696		Gd II	93
3112.079		Fe I	455	3120.72	P	Zr II	50	3129.76		Zr II	5
3112.125		Mo I	2	3120.726		V II	138	3129.933		Y II	51
3112.202		Ce II	138	3120.74		Zr I	37	3129.955		Gd II	76
3112.482		Ti I	92	3120.84		Fe III	29	3130.05		Zr I	37
3112.63		La II	156	3121.05		Cr II	72	3130.175		Ti I	180
3112.81	P	Cr II	125	3121.08		Fe III		3130.262		V II	1
3112.925		V I	56	3121.138		V II	1	3130.416		Be II	1
3113.172		Gd II	93	3121.415		Co I	9	3130.561		Fe II	66
3113.31	P	Fe I	161	3121.515		F III	1	3130.73		Eu II	
3113.473		Co I	48	3121.548		Ce III	2	3130.780		Cb II	1
3113.50		Zr I	37	3121.566		Co I	11	3130.804		Ti I	
3113.560		V II	174	3121.599		Ti II	4	3130.804		Ti II	4
3113.579		F III	1	3121.62		Cl II	20	3130.812		Gd II	76
3113.59		Cr II	186	3121.71		O III	12	3131.064		Be II	1
3113.67	P	Fe I	165	3121.749		V I	56	3131.11		Zr I	37
3113.71		O II	14	3121.76		Fe I	102	3131.211		Cr I	183
3114.05		Pd I	4	3121.760		Gd II	76	3131.257		Tm II	
3114.092		Ti I	181	3121.84		Cr II	72	3131.54		Cr II	53,55
3114.118		Co I	49	3121.97		Cr II	55	3131.719		Fe II	107
3114.124		Ni I	24	3122.065		Ti II	58	3131.81		Hf I	3
3114.295		Fe II	82	3122.542		Sc II	46	3131.829		Co I	48
3114.45		Y II	49,58	3122.596		Cr II	54	3131.845		Hg I	2
3114.680		Fe II	82	3122.61		Zr II	51	3132.058		Cr II	5
3115.088		Ti II	58	3122.62		O II	14	3132.06		Zr I	37
3115.16		V II	111	3122.665		Fe I	314	3132.12	P	Cr II	125
3115.172		Nd II		3122.782		Au I	1	3132.218		Co I	7
3115.28		Cr II	54	3122.887		V II	173	3132.22		Ne II	13
3115.352		Fe II		3122.954		Sc II	39	3132.514		Fe I	578
3115.465		Mn I	38	3123.074		Ti I	67	3132.591		Mo I	3
3115.492		Fe II	96	3123.18		Fe III		3132.793		V II	122
3115.51		Cr I	163	3123.29		Ca II	10	3132.820		Cr I	183
3115.65		Cr II	46	3123.353		Fe I	164	3132.86		O III	12
3115.669		F III	1	3123.715		Fe II		3133.048		Fe II	82
3115.73		O III	12	3123.72		Cl II	20	3133.094		Gd II	9
3115.73		Zr II	75	3123.769		Ti I	181	3133.096		Sc II	39
3116.02		V II	139	3123.989		Gd II	11	3133.329		V II	1
3116.11		V II	139	3124.02		O II	14	3133.49		Zr II	63
3116.141		Nd II		3124.08		Fe I	165	3133.603		Nd II	
3116.250		Fe I	165	3124.250		Gd II	10	3133.852		Gd II	76
3116.39	P	Fe I	261	3124.762		F III	1	3133.886		Tm II	4
3116.590		Fe II	82	3124.817		Ge I	1	3133.96	P	Fe I	161
3116.633		Fe I	28	3124.978		Cr II	5	3134.08	P	Fe I	160
3116.714		Ni I	95	3125.01		V II	84	3134.108		Ni I	25
3116.76		Cr II	126	3125.02		Cr II	70	3134.111		Fe I	28
3116.78		V II	237	3125.03	P	Fe I	53	3134.15	P	Fe I	29
3116.95		Hf II	33	3125.15		Ca II	10	3134.17	P	Fe II	121
3117.28		Cr II	46	3125.21		Zr II	24	3134.208		F III	1
3117.455		Ti I	92	3125.282		V II	1	3134.32		O II	14
3117.505		Fe II	226	3125.46		Cr II	55	3134.33		Cr II	94
3117.63		Fe I	29	3125.553		Ti I	192	3134.654		Ti I	91
3117.656		Ca I	16	3125.653		Fe I	28,160	3134.72		Hf II	5
3117.669		Ti II	67	3125.656		Ti I	192	3134.819		Mn II	15
3117.75		S IV	1	3125.668		Hg I	3	3134.82		O II	14
3117.899		Ti I	92	3125.68	P	Fe I	194	3134.897		Nd II	
3117.974		Gd II	76	3125.79		Cr II	186	3134.90		A IV	1
3118.02		Ne II	16	3125.92		Zr II	5	3134.928		V II	122
3118.130		Ti I	181	3126.02		Sc II	39	3135.034		Gd II	11
3118.14		Cr II	55	3126.16		Y II	78	3135.069		Ti I	180
3118.249		Co I	11	3126.175		Fe I		3135.17		Y II	11
3118.376		V II	1	3126.215		V II	1	3135.35		Cr II	124
3118.56	P	Ni I	94	3126.25		Si III	11	3135.360		Fe II	82
3118.600		Gd II	93	3126.27		Hf II	7	3135.483		Na II	3
3118.636		Co I	12	3126.79		V II	122	3135.507		Mn II	15
3118.652		Cr II	5	3126.84	P	Fe I	260	3135.74		Cr II	94
3118.74	P	Fe II	121	3127.252		Co I	26	3135.80		Fe III	77
3118.75		Fe III	51	3127.526		Cb II		3135.82		Ne II	3
3118.824		Ti II	27	3127.530		Ce II	150	3135.863		Fe I	194
3119.04	P	Fe I	315a	3127.684		Ti I	180	3135.875		Al II	19
3119.08		Gd II	10	3127.883		Ti II	121	3135.91		Cr I	183
3119.246		Cr I	163	3128.286		Sc II	39	3136.00		S III	13
3119.32		V II	110	3128.288		V II	84	3136.003		Ca I	15
3119.336		Gd II	10	3128.560		Gd II	76	3136.028		Ti I	91
3119.495		Fe I	194	3128.640		Ti I	92,192	3136.08	P	Fe I	160

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3136.17		Fe I		3144.488		Fe I	161	3154.195		Ti II	10
3136.315		Mn II	15	3144.68		O V	2	3154.201		Fe II	66
3136.43		Fe III	39	3144.700		V II	122	3154.387		F III	4
3136.465		Mo II	2	3144.730		Ti II	111	3154.41	P	Fe I	100
3136.503		V II	122	3144.74	P	Ti II	10	3154.510		Fe I	161
3136.55		A II		3144.751		Fe II	82	3154.585		Ni I	78
3136.680		Cr II	5	3144.92	P	Fe I	195	3154.66	P	Cr II	54
3136.726		Co I	8	3145.00		Gd II	10	3154.678		Co I	108
3136.77		Ti II	27	3145.022		Co I	50	3154.794		Co I	73
3136.95		Zr I	54	3145.057		Fe I	455	3154.80		V II	249
3136.999		Co I	48	3145.10		Cr II	5	3154.82		Ne II	14
3137.328		Co I	10	3145.121		Ni I	7	3155.12	P	Fe I	161
3137.352		Ti I	91	3145.283		Ce II	120	3155.149		Cr I	115
3137.454		Co I	108	3145.32		Hf II	2	3155.293		Fe I	193
3137.55		Cr II	54	3145.337		V II	1	3155.409		V II	51
3137.66		A II	71	3145.402		Ti II	10,111	3155.50	P	Ti II	27
3137.755		Co I	49	3145.405		Cb II	5	3155.63	P	Ti II	37
3137.940		Gd II	54	3145.46	P	Fe I	160	3155.670		Ti II	10
3138.05		V II	205	3145.515		Ti I	91	3155.68		Zr II	63
3138.094		Gd II	10	3145.516		Gd II	76	3155.704		Ce II	217
3138.203		Cr I	183	3145.536		F III	1	3155.80	P	Fe I	192a
3138.207		Fe II	227	3145.719		Ni I	11	3155.91	P	Ti II	121
3138.40	P	Fe I	53	3145.77		Cr II	85	3155.95		Zr II	49
3138.44		O II	14	3145.971		V II	1	3155.950		Fe II	67
3138.46		Sc II	39	3146.226		V II	138	3156.11		F III	4
3138.66		Zr II	5	3146.407		Ce II	70	3156.222		V I	
3139.02		A II	47	3146.47		A II	49	3156.248		Os I	4
3139.10	P	Fe I	161	3146.475		Fe I	160	3156.275		Fe I	578
3139.34		Cl III	3	3146.748		Fe II	67	3156.464		Fe I	454
3139.39		Pt I	2	3146.818		V II	138	3156.532		Gd II	11
3139.60	P	Fe I	161	3146.878		Gd II	76	3156.59		Pt I	2
3139.661		Fe I	155	3146.91		Sc II	39	3156.68		Hf I	5
3139.67		Hf II	6	3146.962		F III	1	3157.00		Zr II	23
3139.729		Sc II	39	3147.05		Ce III	7	3157.040		Fe I	160
3139.733		V II	122	3147.060		Co I	10	3157.15	P	Fe I	144
3139.77		O II	14	3147.19	P	Cr II	54	3157.344		Tm II	8
3139.79		Zr I	56	3147.227		Cr II	5	3157.397		Ti II	4
3139.87		Ti I	180	3147.38		Si III	11	3157.44	P	Sc II	32
3139.908		Fe I		3147.792		Fe I	455	3157.52		Cr II	93
3139.91		Cr II	54	3147.84		Cr II	93	3157.82		Zr I	36,55
3139.947		Co I	9	3147.86		Cl II	10	3157.88		Fe I	164
3139.98	P	Co I	73	3147.931		Rh II	8	3157.900		V II	50
3140.04	P	Ti II	27	3148.033		Ti II	4	3157.992		Fe I	159
3140.08		Fe III	94	3148.179		Mn I	19	3158.03		Cr II	70
3140.21		Cr II	124	3148.24		A II		3158.156		Mo I	2
3140.272		Rh II	8	3148.420		Fe I	194	3158.21	P	Fe I	160
3140.385		Fe I	578	3148.445		Cr I	115	3158.293		Co I	12
3140.67		Cr II	124	3148.46	P	Fe I	161	3158.32	P	Fe II	95
3140.692		Fe II	227	3148.738		V II	249	3158.772		Co I	10
3140.715		Co I	75	3148.81		Zr I	37	3158.869		Ca II	4
3140.77		Hf II	31	3149.12		Cr II	84	3158.99		Fe I	452
3140.782		Ca I	15	3149.267		Na II	4	3159.10		Cr II	5
3141.07		V II	205	3149.310		Co I	9	3159.12		Zr II	126
3141.164		Ca I	15	3149.50	P	Fe I	453	3159.25	P	Fe I	259
3141.247		Ce III	2	3149.56		Si IV	2	3159.254		Rh II	2
3141.35		Ne II	47	3149.83		Cr II	54	3159.32	P	Fe II	120
3141.486		V II	152	3149.87		W II	5	3159.365		V II	83
3141.537		Ti I	66	3150.11		Cr II	54	3159.521		Ni I	11
3141.670		Ti I	192	3150.20	P	Fe I	161	3159.59		Cr I	92
3141.80		Cr II	175	3150.301		Fe I	578a	3159.662		Co I	9,26
3141.891		Cr I	116	3150.568		V I		3159.86		Cr II	54
3142.183		V II	172	3150.738		Ca I	15	3160.03		W II	8
3142.22		Fe III	1	3151.036		Tm II		3160.09		Ti I	28
3142.220		Fe II	7	3151.11		Ti I	28	3160.11		Cr II	54
3142.312		Ce II	46	3151.16		Ne II	16	3160.200		Fe I	578
3142.445		Fe I	164	3151.259		Ni I		3160.342		Fe I	192a
3142.484		V II	52	3151.280		Ca I	15	3160.52		Cl II	
3142.670		Mn I		3151.31		W II	16	3160.60		Y II	57
3142.74		Cr II	85	3151.319		V II	138	3160.61		Cr I	115
3142.76		La II	31	3151.353		Fe I	311	3160.658		Fe I	155
3142.777		F III	4	3151.500		Rh II	2	3160.69		Gd II	11
3142.888		Fe I	144	3151.86		Fe III		3160.77	P	Fe I	159
3142.900		Gd II	76	3151.867		Fe I	7	3160.781		V II	65,138
3142.97		Cr II	125	3152.14	P	Ti II	27	3160.92	P	Fe I	160
3143.131		Gd II	25	3152.21		Cr II	71	3161	P	N V	2
3143.16	P	Ti I	28	3152.251		Ti II	10	3161.01		Zr II	104
3143.242		Fe I	7	3152.525		Sm II		3161.039		Mn I	19
3143.350		Ti I	180	3152.707		Co I	73	3161.205		Ti II	10
3143.36		Fe III	13	3152.881		Cr I	116	3161.313		V II	151
3143.477		V II	122	3153.064		Fe I	99,452	3161.369		Gd II	10
3143.657		Ru II	2					3161.370		Fe I	52
3143.68		Cr II	53	3153.200		Fe I	161	3161.38		A II	97
3143.68	P	Ti II	37	3153.322		Fe I	160	3161.44		Cl II	11
3143.74		Ne II	24	3153.54		Cr I	200	3161.45		A II	
3143.756		Ti II	4	3153.549		V I		3161.55	P	Fe I	195
3143.91		Cr II	94	3153.692		Co I	7	3161.638		Gd II	25
3143.956		Ce III	2	3153.80		A II	118	3161.652		Co I	73
3143.990		Fe I	578	3154.04		Cr II	53	3161.66	P	Ti II	27
3144.37		Y II	49	3154.10		Cr II	69	3161.755		Ti II	10
3144.409		Cr I	92	3154.11	P	Fe I	53	3161.945		Fe II	7

I A	Type	Element	Multiplet No.
3161.949		Fe I	160
3162.284		Rh II	1
3162.335		Fe I	159,310
3162.46		Cr II	46
3162.57		Hf I	2
3162.570		Ti II	10
3162.61		Hf II	30
3162.714		V II	83
3162.764		Gd II	54
3162.799		Fe II	120
3163.024		V II	84
3163.091		Fe II	7
3163.403		Cb II	1
3163.61		A II	118
3163.731		Na II	7
3163.756		Cr I	115
3163.76		V II	249
3163.77	P	Cr II	123
3163.86	P	Fe II	79
3163.93		Cr II	69
3164.06		Cr I	200
3164.154		Ce II	69
3164.166		Ni I	79
3164.26		Fe II	79
3164.28		Cr II	46
3164.308		Fe I	163
3164.32		Zr II	50
3164.46		Ne II	13
3164.48		Cr II	115
3164.618		Ca I	14
3164.67		Fe III	8
3164.82		V II	8
3164.91		Ti II	
3165.005		Fe I	155
3165.08	P	Fe I	194
3165.16	P	Fe I	100
3165.24	P	Ti II	37
3165.31		A II	
3165.45		Zr II	63
3165.508		Ni I	21
3165.51		C II	9
3165.70		Ne II	13
3165.72		Si IV	2
3165.86	P	F III	1
3165.860		Fe I	160
3165.89		V II	84
3165.94		Mg II	14
3165.957		Fe II	
3165.98		Zr II	5
3165.99		C II	9
3166.22	P	Fe II	79
3166.24	P	Fe I	155
3166.29		Zr II	48
3166.39		V II	84
3166.435		Fe I	259
3166.59	P	Fe I	100
3166.670		Fe II	6
3166.948		Rh II	5
3166.98	P	Fe I	455
3167.420		V II	217
3167.49		V II	236
3167.54		Fe III	28
3167.78	P	Fe I	99
3167.853		Fe II	66
3167.907		Fe I	578
3167.94	P	Fe II	82
3167.95		C II	9
3168.060		Co I	108
3168.127		V II	8
3168.21		Fe III	94
3168.519		Ti II	10
3168.86		Fe I	160
3168.94	P	Fe I	160
3168.98		Mg II	14
3169.09	P	Fe I	813
3169.183		Ce II	74
3169.20		Cr II	123
3169.21		V II	65
3169.30		Ne II	16
3169.58		Cr I	115
3169.58	P	Fe I	161
3169.68		A II	47
3169.766		Co I	109
3169.85		Cr II	173
3169.854		Ca I	14
3169.875		Sm II	31
3170.16		C III	8
3170.208		V II	217
3170.23		Cl II	
3170.333		Mo I	3
3170.337		Fe II	6
3170.40		Sc II	32
3170.715		Ni I	78
3171.016		Fe II	
3171.09		Gd II	10
3171.14		N III	
3171.353		Fe I	52,548
3171.615		Ce II	99
3171.659		Fe I	160
3171.68		La III	1
3171.739		V II	217
3172.067		Fe I	99,193
3172.08		Cr II	71
3172.11	P	Fe I	100
3172.169		Gd II	129
3172.230		V II	249
3172.30	P	Fe I	312
3172.731		Ti I	65
3172.79		Mg II	13
3172.828		Tm II	8
3172.94		Hf I	5
3172.97		N III	
3173.07		Y II	51
3173.140		Co I	48
3173.40		Fe I	333
3173.56		Co I	72
3173.58		Cr II	83
3173.58		Ne II	13
3173.607		Ru II	3
3173.608		Fe I	333
3173.66		Cl II	
3173.663		Fe I	101
3173.678		Rh II	5
3174.077		V II	84
3174.09		Fe III	38
3174.125		F III	2
3174.140		Co I	138
3174.22	P	Fe I	578
3174.531		V II	217
3174.725		F III	2
3174.80		Ti II	
3174.88		La II	157
3174.905		Co I	71
3175.046		Sn I	1
3175.077		Fe II	157
3175.16		P V	1
3175.317		Ru II	2
3175.447		Fe I	155
3175.66		Ti II	120
3175.84		Mg II	13
3175.97		Fe I	333
3175.97		W II	7
3176.00		Fe III	38
3176.16		Ne II	16
3176.292		Ni I	77
3176.366		Fe I	258
3176.602		W I	5
3176.70	P	Sc II	32
3176.85		Hf II	8
3176.86		Fe III	38
3177.060		Ru II	2
3177.137		Ce II	103
3177.22		W II	6
3177.260		Fe II	79
3177.266		Co I	
3177.490		Gd II	129
3177.52	P	Fe I	159
3177.531		Fe II	82
3177.61	P	Fe II	95
3177.65	P	Fe II	79
3177.696		V II	217
3177.80		O IV	7
3177.90		Cr II	40
3177.96	P	Fe I	159
3178.015		Fe I	156
3178.03		Fe III	38
3178.10		Zr II	63
3178.125		Sm II	21
3178.495		Mn I	19
3178.545		Fe I	454
3178.630		Ti II	120
3178.79		Cr II	173
3178.970		Fe I	192a
3179.055		Na II	7
3179.08		Fe III	38
3179.283		Cr I	92
3179.291		Ti I	65
3179.332		Ca II	4
3179.416		V II	217
3179.42		Y II	10
3179.44		W II	7
3179.45		Cr II	82
3179.479		Fe I	52
3179.504		Fe II	157
3179.538		Fe I	
3180.164		Fe II	157
3180.17	P	Fe III	38
3180.199		Th II	4
3180.223		Fe I	155
3180.225		Ti II	120
3180.290		Cb II	5
3180.290		Co I	106
3180.521		Ca I	14
3180.701		Cr I	
3180.72		O IV	7
3180.73		Cr II	9
3180.756		Fe I	7
3180.98	P	O IV	7
3181.05		A II	47
3181.275		Ca II	4
3181.428		Cr II	9
3181.522		Fe I	258
3181.58		Zr II	63
3181.740		Ni I	78
3181.84		Ti II	122
3181.85		Fe I	333
3181.922		Fe I	155,505
3181.94		Zr II	48
3182.076		Fe I	159,333
3182.118		Co I	73
3182.42		Y II	49
3182.57		Ti II	122
3182.59		V II	217
3182.674		V II	150
3182.86		Zr II	23
3182.970		Fe I	100
3183.038		Ni I	78
3183.115		Fe II	7
3183.251		Ni I	78
3183.26	P	Zr II	105
3183.325		Cr II	82
3183.406		V I	14
3183.523		Ce II	216
3183.58	P	Fe I	192a
3183.916		Sm II	
3183.96		V I	14
3183.982		V I	14
3184.09		Ti II	3
3184.36		Cr II	123
3184.367		Ni I	11
3184.43	P	Fe II	67
3184.631		Fe I	155,162
3184.896		Fe I	7
3185.095		Fe II	67
3185.16		S III	13
3185.16		Si III	8
3185.315		Fe II	7
3185.396		V I	14
3185.72		O IV	7
3186.01		Si III	
3186.10		V II	64
3186.126		Ce II	167
3186.19		A II	48
3186.350		Co I	8
3186.451		Ti I	27
3186.740		Fe II	6
3186.75		Cr II	69
3186.82	P	Fe I	100
3186.86		V II	63
3187.006		Sm II	21
3187.16	P	Fe I	333
3187.216		Sm II	13,40
3187.294		Fe II	120
3187.592		Mo II	2
3187.60		Ne II	3
3187.68	P	Fe I	52
3187.717		V II	8
3187.743		He I	3
3187.787		Sm II	31
3187.889		Rh II	5
3188.011		Cr I	92
3188.10		V II	49
3188.17	P	O IV	7
3188.377		Co I	74
3188.522		V II	8
3188.567		Fe I	159
3188.603		Rh II	8
3188.65	P	O IV	7
3188.74		Ne II	14
3188.819		Fe I	159

I A	Type	Element	Multiplet No.
3188.95		Si II	
3189.04		Cl II	65
3189.24		W II	6,10
3189.52		Ti II	120
3189.638		Ce II	97
3189.74		Fe III	55
3189.752		Co I	9
3189.76		V II	83
3189.783		Na II	4
3189.85		Cr II	123
3190.02		Fe I	259
3190.403		Sc II	42
3190.651		Fe I	548
3190.686		V II	8
3190.69		Cr II	174
3190.81		Fe III	
3190.825		Fe I	548
3190.84	P	Fe II	120
3190.86		Ne II	13
3190.874		Ti II	26
3191.005		Sc II	42
3191.044		Gd II	129
3191.096		Cb II	1
3191.11		Fe I	258
3191.180		Fe I	452
3191.23		Zr I	19
3191.297		Co I	7
3191.374		Fe II	79
3191.39		La II	157
3191.41	P	Fe I	682
3191.45		Cl III	3
3191.577		W I	5
3191.659		Fe I	8
3191.875		Ni I	125
3191.93		Zr II	50
3191.994		Ti I	27
3192.059		Fe II	66
3192.12		Cr I	13
3192.220		Co I	72
3192.26		Ti II	25
3192.417		Fe I	100,711
3192.68		Ti II	120
3192.699		V II	83
3192.799		Fe I	155
3192.84	P	Fe I	452
3192.917		Fe II	6
3193.014		Sm II	
3193.02		La II	45
3193.10		Si II	
3193.164		Co I	26
3193.174		Gd II	54
3193.200		V II	83
3193.214		Fe I	7
3193.314		Fe I	159
3193.41		Cr II	52
3193.48		Y II	48
3193.53		Hf II	2
3193.74	P	Fe I	682
3193.75	P	Ni I	92
3193.76	P	Fe II	79
3193.809		Fe II	6
3193.85	P	Fe II	67
3193.969		Mo I	3
3193.97		V II	49
3194.03	P	Fe I	156
3194.099		Cu I	3
3194.19		Hf II	10
3194.25		A II	46
3194.26		Ti II	120
3194.422		Fe I	155
3194.56		Ti II	120
3194.61		Ne II	16
3194.63		Cr II	70
3194.75		O IV	7
3194.76	P	Ni I	108
3194.76		Ti II	
3194.825		Ce II	217
3194.983		Cb II	1
3195.50		V II	
3195.573		Ni I	12
3195.62		Y II	10
3195.63		Hf II	45
3195.717		Ti II	25
3195.994		Ti II	46
3196.070		Fe II	7
3196.147		Fe I	333
3196.182		Sm II	40
3196.37	P	Cr I	79
3196.40		Cr II	9,115
3196.50		Si III	
3196.532		Gd II	9
3196.574		V II	62
3196.63	P	Fe II	95
3196.930		Fe I	155
3196.96		Cr II	9
3197.00		Fe I	8
3197.08		Zr II	126
3197.113		Ni I	24
3197.12		Cr II	9
3197.518		Ti II	3
3197.53		Fe I	711
3197.574		V II	150
3198.00		Cr II	
3198.012		V I	14
3198.112		Cr I	91
3198.266		Fe I	258
3198.42		Y II	39
3198.62		Ne II	13
3198.660		Co I	26
3198.726		Ti I	191
3198.81		Fe III	6
3198.88	P	Ne II	13
3198.917		Ir I	7
3199.279		Ce II	106
3199.322		Co I	9
3199.34		Ti I	191
3199.342		Ni I	
3199.37		Sc II	42
3199.43		Ti I	191
3199.50	P	Fe I	7
3199.53		O IV	7
3199.530		Fe I	156
3199.54		Si II	
3199.87		Cr II	101
3199.915		Ti I	27
3199.93	P	Fe I	156
3199.99		Hf II	55
3200.28		Y II	10
3200.423		Ni I	23
3200.45		Cr II	114
3200.454		Gd II	129
3200.475		Fe I	155,162
3200.67		Zr II	37
3200.790		Fe I	8
3200.95		O III	31
3201.24	P	Cr I	79
3201.26		Cr II	114
3201.58		V II	
3201.594		Ti I	90
3201.714		Ce II	76
3201.891		Fe I	159
3201.90		Fe III	6
3201.95		K III	5
3201.97	P	Cr I	79
3202.142		Ni I	94
3202.381		V I	14
3202.52		Cr II	173
3202.535		Ti II	26
3202.562		Fe I	547
3202.66	P	Fe I	52
3202.711		V II	62
3202.740		F II	8
3203.026		Co I	9
3203.05		Cl II	
3203.104		He II	1
3203.33		Y II	10
3203.39		Al I	20
3203.435		Ti II	3
3203.509		Fe II	79
3203.53		Cr II	46
3203.58		Ti I	26
3203.67		Hf II	21
3203.741		Fe II	196
3203.828		Ti I	27
3203.89		Si II	7
3204.06		P V	1
3204.196		V I	13
3204.34		A II	71
3204.36		Zr II	63
3204.55	P	Cr I	79
3204.76		Fe III	6
3204.870		Ti I	90
3205.03		A II	133
3205.11		Cr II	114
3205.168		Ti I	26
3205.400		Fe I	155
3205.582		V I	73
3205.64	P	Ti II	46
3205.848		Ti I	26
3205.990		Ti II	26
3206.16		V II	
3206.344		Ti I	179
3206.350		Cb II	5
3206.466		Gd II	129
3206.77		Hf II	56
3206.825		Ti I	179
3206.908		Mn I	14
3206.952		Ni I	94
3206.98		Fe III	6
3207.092		Fe I	159
3207.12	P	O III	31
3207.185		Sm II	2
3207.248		W I	9
3207.297		Rh II	1
3207.337		Ti I	90
3207.410		V I	14
3207.61		A II	132
3207.649		Fe I	382
3207.897		Ti I	179
3208.02		Cr II	114
3208.13		La II	
3208.231		Cu I	3
3208.32		Zr II	4
3208.345		V II	8
3208.470		Fe I	711
3208.607		Ti II	120
3208.62		Cr II	9
3208.838		Mo I	2
3208.91		Ni II	2
3208.99		Ne II	14
3209.030		Ti I	179
3209.115		Fe I	97
3209.13		La II	114
3209.21		Cr II	9
3209.297		Fe I	333,711
3209.34		K III	5
3209.38		Ne II	16
3209.603		Fe II	137
3209.64		O IV	7
3209.80		Co I	70
3209.912		Ni I	94
3209.930		Ca I	13
3210.04		Si II	7
3210.219		Co I	106
3210.230		Fe I	159
3210.449		Fe II	6
3210.52		Si III	
3210.62		Cr I	13
3210.825		Tm II	4
3210.830		Fe I	156
3210.98		Zr II	63
3211.01		Co I	154
3211.07		Ti I	191
3211.072		Fe II	95
3211.309		Cr I	220
3211.494		Fe I	162
3211.693		Fe I	711
3211.734		Sm II	
3211.872		Fe I	98,711
3211.947		Rh II	6
3211.989		Fe I	158
3212.02		Zr I	19
3212.121		Ir I	8
3212.186		Na II	4
3212.274		Gd II	54
3212.40		Y II	67
3212.434		V I	73
3212.53		Cr II	81
3212.54		A II	47
3212.56		La II	122
3212.70	P	Ti II	9
3212.85		Zr II	49
3212.884		Mn I	14
3212.91		Cr II	114
3213.145		Ti I	90,191
3213.145		Ti II	3
3213.311		Fe II	6
3213.423		Ni I	91
3213.46		Cr II	153
3213.59		Ti II	120
3213.70		Ne II	13
3213.771		Fe I	452
3213.972		F III	2
3214.044		Fe I	156,711
3214.059		Ni I	93
3214.07	P	Fe I	158
3214.125		Sm II	25
3214.14		Ti II	84
3214.19		Zr II	3
3214.240		Ti I	27

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3214.38		Ne II	14	3223.332		Cb II	5	3231.528		Sm II	13
3214.396		Fe I	7	3223.444		Fe II		3231.599		Fe I	50
3214.624		Fe I	143	3223.519		Ti I	179	3231.64		Cr II	122
3214.750		Ti II	3	3223.534		Ni I	92,94	3231.69		Zr II	3
3214.750		V II	8	3223.740		Gd II	10	3231.702		Fe II	80
3215.145		Ca I	13	3223.853		Fe I	27	3231.71	P	Ti II	46
3215.262		Sm II	40	3224.05	P	Fe I	920	3231.75		Cl II	73
3215.334		Ca I	13	3224.241		Ti II	84	3231.952		V II	61
3215.375		V I	13	3224.297		Gd II	92	3231.97		Ne II	11
3215.578		W I	5	3224.632		Co I	71	3232.00		Y II	49
3215.595		Cb II	1	3224.761		Mn I	3	3232.055		Os I	3
3215.60		Fe III	6	3224.82		Ne II	43	3232.16	P	Fe I	258
3215.637		Fe I	332	3224.86	P	Fe II	178	3232.280		Ti II	36
3215.940		Fe I	156	3225.020		Ni I	39	3232.38		Ne II	11
3215.97		O III	31	3225.17		Y II	39	3232.52		Sb I	2
3216.06	P	Fe I	682	3225.39		Cr II	140	3232.61		Li I	2
3216.08		O II	107	3225.44		Cr II	45	3232.791		Fe II	119
3216.203		Ti I	90	3225.460		Gd II		3232.791		Ti I	179
3216.31	P	O IV	7	3225.478		Cb II	1	3232.874		Co I	106
3216.55		Cr II	82	3225.607		Fe I	192,920	3232.963		Ni I	7
3216.70		Y II	10	3225.789		Fe I	155	3233.02		Ca III	4
3216.75		A II		3225.896		Ca I	13	3233.053		Fe I	620
3216.76		O II	107	3225.976		Na II	17	3233.174		Ni I	91,184
3216.821		Ni I	93	3226.00		A II	46	3233.190		V I	72
3216.850		Sm II	13	3226.034		Mn I	14	3233.234		Cr I	25
3216.88	P	Ti II	36	3226.106		V I	14	3233.24		S III	3
3216.946		Mn I	3	3226.128		Ti I	179	3233.304		Fe I	142
3216.996		Co I	70	3226.129		Ca I	13	3233.324		Rh II	2
3217.056		Ti II	2	3226.240		Ti I	27	3233.546		V II	61
3217.12		La II	156	3226.318		Gd II	75	3233.62		P III	4
3217.121		V I	14	3226.36		Cr II	114	3233.772		V II	61
3217.121		W II	38	3226.378		Fe II	178	3233.88		Ni I	
3217.30		Hf II	4	3226.55		Cr I	25	3233.967		Fe I	158
3217.380		Fe I	157	3226.727		Fe I	8	3233.968		Mn I	
3217.44		Cr II	9	3226.771		Ti II	3	3234.00		Si III	6
3217.53	P	Fe I	254	3226.924		V II	185	3234.06		Cr II	63
3217.70		A II	132	3226.984		Ni I	7	3234.119		Co I	72
3217.830		Ni I	91	3226.986		Co I	124	3234.12		Zr I	19
3217.942		Ti I	179	3227.067		Fe I	156	3234.165		Ce II	119
3218.10		O II	107	3227.114		Ce II	95	3234.17		S III	3
3218.20		Hf II	78	3227.17	P	Fe I	247	3234.274		Ce II	80
3218.21		Ne II	13	3227.23		Cr I	162	3234.50	P	Ti II	46
3218.26	P	Ti II	46	3227.409		V I	134	3234.504		V II	61
3218.270		Ti II	84	3227.48		Cr II	153	3234.517		Ti II	2
3218.34		Fe III	87	3227.732		Fe II	6	3234.614		Fe I	8
3218.44	P	Ti II	46	3227.752		Co I	8	3234.649		Ni I	21
3218.614		Sm II		3227.798		Fe I	157	3234.923		Fe II	1
3218.68		Zr II	35	3228.003		Fe I	379	3234.926		Na II	10
3218.683		Ti I	90	3228.090		Mn I	14	3235.003		Mn I	
3218.70		Cr I	92	3228.183		Ti I	179	3235.26		Cr II	139
3218.869		V I	72	3228.262		Fe I	157	3235.33	P	Fe I	309
3218.944		Ce II	75	3228.36	P	Ti II	46	3235.448		Tm II	8
3218.98		Pd I	2	3228.564		Ce III	1	3235.532		Co I	71,138
3219.13		Cr II	140	3228.600		Fe II		3235.592		Fe I	308
3219.150		Co I	8	3228.605		Ti II	24	3235.753		Ni I	11
3219.212		Ti I	179	3228.784		Sm II	52	3235.783		Co I	72
3219.32		P III	4	3228.81		Zr II	49	3235.95	P	Ti I	47
3219.37	P	Fe I	308	3228.900		Fe I	157	3236.106		Gd II	75
3219.58		Fe I	156	3229.123		Fe I	8	3236.122		Ti II	24
3219.60	P	Fe I	254	3229.193		Ti II	2	3236.17		Zr II	104
3219.616		Cr I	220	3229.204		Cr I	220	3236.223		Fe I	7
3219.77	P	Fe I	8	3229.36		Co I	152	3236.403		Cb II	1
3219.79		Cr II	63	3229.363		Ce II	94	3236.573		Ti II	2
3219.806		Fe I	158	3229.38		Cr II	46	3236.61		Zr II	125
3219.811		Ni I	94	3229.397		Ti II	36	3236.638		Sm II	
3220.467		Ti II	9	3229.50		Ne II	43	3236.735		Ce II	101
3220.62		Co I	152	3229.604		V I	134	3236.778		Mn I	14
3220.66		Hf II	30	3229.73		Zr II	149	3236.806		Tm II	13
3220.772		Ir I	5	3229.78		Fe I	247	3236.82		A II	83
3220.835		Fe II	106	3229.89		Cr II	114	3237.028		Co I	7
3221.151		Ti I	26	3229.994		Fe I	546	3237.234		Fe I	256
3221.171		Ce II	215	3230	P	O V	9	3237.402		Fe II	81
3221.273		Ni I	185	3230.09	P	Fe I	27	3237.414		Mn I	
3221.378		Ru II	3	3230.16	P	Fe I	156	3237.54		Zr II	50
3221.380		V II	109	3230.16		Ne II	11	3237.729		Cr I	114
3221.381		Ti I	179	3230.210		Fe I	158	3237.815		Fe II	81
3221.64		A II	46	3230.496		Fe II	95	3237.876		V II	38
3221.652		Ni I	8	3230.55		Si III	6	3238.087		Cr I	114
3221.76	P	Ti II	46	3230.559		Sm II	21	3238.224		Ti I	179
3221.936		Fe I	156	3230.646		V I	13	3238.31		Fe III	79
3221.978		Ru II	7	3230.719		Mn I	14	3238.32	P	Fe I	545
3222	P	O V	5,9	3230.919		V II	48	3238.50		Cr I	162
3222.05	P	Fe I	451	3230.963		Fe I	157	3238.535		Fe I	397
3222.069		Fe I	156	3231.09	P	Ni I	106	3238.57		O III	9
3222.42		A II	132	3231.10		S III	3	3238.621		Gd II	92
3222.48		Zr II	104	3231.20		Y II	65	3238.74		Fe III	64
3222.741		Ti I	26	3231.236		Ce II	149	3238.77		Cr II	63
3222.843		Ti II	2	3231.315		Ti II	9	3239	P	O V	5
3223.08	P	Fe I	682	3231.349		Nd II	42	3239.029.		Fe I	141,142
3223.273		Fe I	51	3231.509		Tm II	13	3239.037		Ti I	2

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3239.04		Fe III	63	3248.516		Mn I	14	3256.779		V I	138
3239.101		Rh II	2	3248.602		Ti I	89	3257.072		Gd II	92
3239.14		Cr I	92	3248.602		Ti II	66	3257.244		Fe I	27,451
3239.256		Co I	47	3248.70		Ti II	9	3257.358		Fe II	94
3239.35	P	Fe I	379	3249	P	O V	9	3257.594		Fe I	90
3239.436		Fe I	157	3249.037		Fe I	308	3257.822		Cr I	113
3239.46	P	Fe I	157	3249.16	P	Fe II	65	3257.83		S II	17
3239.657		Sm II	48	3249.204		Fe I	253	3257.893		V II	108
3239.664		Ti II	24	3249.35		La II	31	3257.894		Fe II	178
3239.833		V II	61	3249.370		Ti II	23	3257.90		C III	6
3239.87	P	Fe II	81	3249.440		Ni I	10	3257.965		Na II	14
3240.013		Fe I	545	3249.464		V II	82	3258.01		Cr II	152
3240.07		Cr II	140	3249.566		V I	13	3258.035		Co I	47
3240.11	P	Fe I	158	3249.617		V II	38	3258.048		Tm II	4
3240.230		Tm II		3249.657		Fe II	81	3258.413		Mn I	14
3240.399		Mn I	13	3249.742		Gd II	75	3258.62	P	Fe I	157
3240.516		Rh II	6	3249.82		A II	47	3258.67		Si III	12
3240.616		Mn I	14	3249.911		Fe II	78	3258.77		Cr II	159
3240.71		Ti II	9	3249.995		Co I	26	3258.773		Fe II	81
3240.785		V II	61	3250.187		Gd II	92	3258.80		Pd I	5
3240.84	P	Ti I	47	3250.27		Fe III	37	3259.007		Ru II	6
3240.85	P	Zr II	12	3250.34	P	Fe II	78	3259.04		Ti I	123
3240.951		Cr I	25	3250.372		Sm II	2	3259.048		Fe II	81
3241.01		Zr II	4	3250.400		Fe I	142,379	3259.20		Co I	153
3241.05		Co I	9	3250.42		Zr I	19	3259.250		Gd II	92
3241.161		Sm II	6	3250.44		Zr II	125	3259.32		Cl III	6
3241.38		Cr II	153	3250.51		Co I	154	3259.42		Ti I	123
3241.43	P	Fe I	158	3250.58		Cr I	114	3259.44		C III	6
3241.50	P	Fe I	27	3250.634		Fe I	95	3259.44	P	Fe II	178
3241.530		Tm II	4	3250.743		Ni I	39	3259.60		Cr I	25
3241.586		Sm II	22	3250.747		Mo II	2	3259.684		V II	48
3241.67		Si III	6	3250.775		V II	171	3259.71		A II	
3241.685		Fe II	80	3250.79		Cr II	61	3259.75	P	Fe II	81
3241.835		Be II	5	3251.135		Mn I	14	3259.975		Cr I	114
3241.984		Ti II	2	3251.236		Fe I	93	3259.991		Fe I	157
3242.18		Zr II	126	3251.32		Sc II	5	3260.11		Zr I	35
3242.268		Fe I	255	3251.34	P	Fe II	137	3260.231		Mn I	14
3242.30		Y II	10	3251.46	P	Zr II	62	3260.259		Ti I	89
3242.304		Gd II	92	3251.656		Co I	152	3260.259		Ti II	45
3242.72		Pd I	3	3251.66		Pd I	6	3260.276		Fe I	250
3242.834		Gd II	75	3251.836		Cr I	113	3260.286		Co I	154
3243.058		Ni I	22	3251.869		V II	108	3260.564		Cb II	
3243.118		Fe I	192	3251.911		Ti II	2	3260.814		Co I	107
3243.34		Ne II	15	3252.12	P	Fe I	247	3260.975		Ce II	258
3243.36		W II	13,15	3252.40	P	Fe II	78	3260.98		O III	8
3243.370		Ce II	214	3252.483		Ce II	182	3261.050		Cd I	1
3243.406		Fe I	381,710	3252.743		Gd II	136	3261.081		V I	
3243.513		Ti I	179	3252.914		Ti II	2	3261.332		Fe I	712
3243.579		Co I	47	3252.928		Fe I	252	3261.509		Fe II	195
3243.70		A II	47	3252.94		O III	9	3261.56		Cr II	159
3243.723		Fe II	119	3252.94	P	Ti II	23	3261.596		Ti II	66,89
3243.74	P	V II	48	3252.948		Mn I	14	3261.80		V II	109
3243.780		Mn I	14	3253.26		Cr I	114	3262.009		Fe I	710
3243.803		Ti I	26	3253.401		Sm II		3262.23		C III	6
3243.840		Co I	69	3253.41		La II	114	3262.284		Fe I	
3244.115		Cr I	25	3253.416		Co I	70	3262.290		Os I	3
3244.15		Ne II	14	3253.44		Si III	12	3262.340		Sn I	3
3244.17	P	Sc II	5	3253.610		Fe I	681	3262.44		Fe III	74
3244.190		Fe I	156	3253.70		Hf II	1	3262.515		Gd II	75
3244.44		Cl III	6	3253.839		Fe I	250	3262.63		Ti I	88
3244.53	P	Ti I	47	3253.943		Sm II	40	3263.04		Fe III	64
3244.69		Cr I	114	3253.954		Fe I	257	3263.213		Co I	124
3245	P	O V	9	3254.03		A II	46	3263.238		V I	12
3245.13		La II	32	3254.039		Mn I	12	3263.25	P	Cr I	25
3245.31		Cr II	62	3254.070		Cb II	1	3263.33		V II	38
3245.370		Ni I	108	3254.202		Co I	69	3263.365		Cb II	
3245.485		Cr I	25	3254.250		Ti II	2	3263.373		Gd II	75
3245.542		Cr I	113	3254.261		Fe I	249	3263.378		Fe I	144
3245.750		Co I	138	3254.32		Lu II	4	3263.43		Ne II	15
3245.80	P	Fe I	920	3254.363		Fe I	620	3263.45	P	Fe I	680
3245.984		Fe I	27	3254.377		Sm II	6	3263.60		A II	46
3246.005		Fe I	8	3254.46	P	Fe I	158	3263.686		Ti II	45
3246.05	P	Fe I	309	3254.63		Co I	154	3263.98		La II	114
3246.492		Fe I	252	3254.734		Fe I	308	3264	P	O V	9
3246.674		Ce II	130	3254.773		V I	13	3264.137		Gd II	92
3246.973		Fe I	95	3254.773		V II	38	3264.22		Fe III	64
3247.01		Cr II	62	3254.95		Cr I		3264.26		Cr II	61
3247.170		Co I	70	3255.28		Hf II	7	3264.291		Rh II	5
3247.171		Fe II	81	3255.30		Cr II	138	3264.44		Ni I	
3247.274		Cr I	25	3255.39		Ne II	23	3264.522		Fe I	90
3247.297		Fe I	157	3255.49		Fe III	96	3264.711		Mn I	13
3247.33		Cr II	81	3255.62		Cr II	153	3264.716		Fe I	157
3247.392		Fe II	119	3255.678		Sc I	9	3264.718		Co I	47
3247.478		Cb II	5	3255.819		Gd II	92	3264.76	P	Fe II	1
3247.540		Cu I	1	3255.884		Fe II	1	3264.81		Zr II	62
3247.55		A II		3256.137		Mn I	14	3264.82	P	Co I	153
3247.908		V II	109	3256.52		Fe I	158	3264.83	P	Co I	9
3248.15		Ne II	15	3256.52	P	Fe I	397	3264.842		Co I	105
3248.206		Fe I	157	3256.53		Zr II	49	3265.046		Fe I	8
3248.457		Ni I	21	3256.54		Fe III	75	3265.352		Co I	106

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3265.46		O III	8	3273.50		Ni I	108	3280.91		Y II	29
3265.480		Ti I	123	3273.52		O II	39	3281.120		V II	136
3265.55	P	Fe I	308	3273.53		Fe III	7	3281.293		Fe II	1
3265.616		Fe I	91	3273.619		Sc I	9	3281.585		Co I	8
3265.67		La II	45	3273.66		Hf II	7	3281.607		Gd II	92
3265.893		V II	74	3273.957		Cu I	1	3281.72		A II	47
3265.899		V I	138	3274.047		Ti I	123	3281.755		V II	136
3266.25		Cr II	121	3274.183		Gd II	92	3281.83	P	Fe I	50
3266.39		Eu II	24	3274.220		Na II	14	3281.880		Ni I	106
3266.43		Ti II	57	3274.24	P	Fe I	95	3281.94		O III	8
3266.446		Ir I	2	3274.452		Fe I	710	3282.232		Co I	47
3266.633		Tm II	8	3274.50		V II	163	3282.305		Gd II	92
3266.634		Cr I	25	3274.640		Be II	2	3282.329		Ti II	66
3266.88		Fe III	7	3274.65		Fe III	96	3282.333		Zn I	4
3266.91		V II	137	3274.661		Ca I	12	3282.51		Y II	65
3266.938		Fe II	65	3274.864		Ce II	104	3282.534		V II	72
3267.035		Fe II	80	3274.90		Ni II	1	3282.696		Ni I	7
3267.31		O III	8	3274.95		Fe III	96	3282.725		Fe I	449
3267.401		Tm II	13	3275.15		Zr II	12	3282.73		Zr I	19
3267.41		Ti I	64	3275.20		Ne II	29	3282.777		Nd II	41
3267.480		Rh II	6	3275.218		Nd II		3282.827		Ni I	106
3267.51		Sb I	2	3275.24	P	Fe I	27	3282.84		Zr II	125
3267.639		Mo II	6	3275.293		Ti II	23	3282.891		Fe I	680
3267.709		V II	7	3275.60	P	Ni I	107	3283.04		Cr II	159
3267.794		Mn I		3275.65		Zr II	92	3283.11		Al III	10
3267.945		Os I	1	3275.66		Co I	43	3283.14	P	Ti II	57
3268.064		Ni I		3275.67		O V	5	3283.21		Sn II	2
3268.234		Fe I	95	3275.685		Fe I	308	3283.22		P III	2
3268.335		Gd II	4	3275.776		Al II	5	3283.30		Fe III	14
3268.48		Cr II	62	3275.848		Fe I	450a	3283.311		V I	12
3268.512		Fe II	118	3275.92		Cr II	151	3283.39		Hf II	30
3268.61		Ti I	88	3276.08		Fe III	7	3283.40	P	Fe II	118
3268.722		Mn I		3276.12		V II	7	3283.400		Tm II	7
3268.92	P	Fe II	81	3276.25		Si III	12	3283.41		Cl III	2
3268.971		Ni I	91	3276.251		Ce II	93	3283.430		Fe I	27
3269.05		A II	46	3276.28		Cr II	172	3283.463		Cb II	
3269.090		Ca I	12	3276.37		Zr II	35	3283.466		Co I	107
3269.240		Fe I	710	3276.477		Fe I	90	3283.573		Rh I	4
3269.42	P	Fe I	95	3276.483		Co I	154	3283.75		Fe III	7
3269.494		Ge I	1	3276.606		Fe II	92	3283.777		Co I	47
3269.60	P	Rh II	8	3276.747		Sm II	48	3283.95		La II	120
3269.66		Zr I	34	3276.774		Ti II	45	3284.360		V I	71
3269.75	P	Cr II	152	3276.81		Cl II	30	3284.432		Ni I	96
3269.77		Cr II	138	3276.811		Tm II	4	3284.57		O III	8
3269.77		Ti II	57	3276.998		Ti II	8	3284.588		Fe I	91
3269.772		Fe II	118	3277.082		V II	137	3284.72		Zr II	4
3269.86		Ne II	15	3277.23		Ni I	90	3284.996		Fe II	93
3269.904		Sc I	9	3277.347		Fe II	1	3285.022		V II	108
3269.964		Fe I	90	3277.448		V II	194	3285.093		Nd II	
3270.115		V II	94	3277.662		Co I	152	3285.20		Fe I	396
3270.14		Cr II	61	3277.69		O II	23	3285.224		Ce II	148
3270.198		Co I	152	3277.71		V II	137	3285.425		Fe II	1
3270.23		Fe III	63	3277.78		Eu II	24	3285.54	P	Fe I	248
3270.351		Mn I		3277.82		P III	2	3285.603		Na II	4
3270.515		Gd II	92	3277.853		Fe II	65	3285.609		Tm II	10
3270.562		Ti I	123	3277.86		Cr I	219	3285.664		Sm II	21
3270.69	P	Fe I	954	3277.939		V I	12	3285.672		V II	162
3270.70		Cr I	219	3278.04		Fe III	7	3285.77		Zr II	91
3270.79		Ne II	2	3278.105		Co I	153	3285.85		A III	1
3270.98		O II	39	3278.290		Ti II	66	3285.89		Zr II	62
3271.002		Fe I	91	3278.43		Y I		3285.96		Cr II	137
3271.118		Ni I	23	3278.553		Mn I	12	3286.026		Fe I	90
3271.124		V II	7	3278.741		Fe I	144,250	3286.029		Ce II	199
3271.13		Zr II	22	3278.79		Cr II	113	3286.067		Ca I	12
3271.151		Ce II	146	3278.79		K III	1	3286.229		Sm II	48
3271.17	P	Ni I	108	3278.842		Co I	72	3286.34		Cr II	172
3271.498		Fe I	680	3278.89		Zr II	149	3286.463		Fe I	710
3271.61		Rh II	2	3278.922		Ti I	63	3286.545		Co I	46
3271.612		Rh I	6	3278.922		Ti II	23	3286.57		W II	1
3271.637		V I	12	3279.25		Si III	12	3286.71		Y II	65
3271.652		Ti II	66	3279.254		Co I	70	3286.755		Fe I	91
3271.666		Mo II	6	3279.26		Zr II	3	3286.756		Ti II	89
3271.693		Fe I	49	3279.529		Gd II	92	3286.946		Ni I	19
3271.778		Co I	70	3279.54		Cr II	121	3286.98	P	Ni I	107
3272.080		Ti II	66	3279.649		Fe II	118	3287.117		Fe I	396
3272.21		Zr II	3	3279.743		Fe I	449	3287.192		Co I	71
3272.25		S II	17	3279.842		Ce II	68	3287.192		Gd II	136
3272.253		Ce II	73	3279.844		V II	73	3287.221		Ni I	55
3272.30	P	Zr II	62	3279.97		O III	29	3287.26		Pd I	3
3272.405		Co I	152	3279.97	P	Ti II	57	3287.31		Zr II	12
3272.60		Fe I	51	3279.98		Hf II	9	3287.37		Al III	10
3272.71		Fe I	712	3279.995		Ti II	35	3287.468		Fe II	118
3272.76		Co I	151	3280.22		P III	6	3287.575		Co I	154
3272.77		Eu II	24	3280.261		Fe I	620	3287.59		O II	23
3272.807		Sm II	40	3280.391		Ti I	88	3287.657		Ti II	89
3273.027		V I	71	3280.58		Fe III	7	3287.70		Cr I	
3273.04		Zr II	3	3280.682		Ag I	1	3287.827		Co I	43
3273.36		A II	71	3280.75		Zr II	34	3288.04		Cr II	62
3273.483		Sm II		3280.756		Mn I	10	3288.142		Ti II	8
3273.499		Fe II	118	3280.763		Fe I	451	3288.324		V II	89

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3288.428		Ti II	66	3299.11		Co I	151	3307.717		Ti II	8
3288.575		Ti II	66	3299.36		O III	3	3307.755		Cr I	78
3288.59	P	Ti I	63	3299.41	P	Sc II	35	3307.90		Cl II	37
3288.660		Fe I	144	3299.413		Ti I	61	3308.02		Eu II	25
3288.81		Fe III	7	3299.44	P	Ti II	8	3308.15		Cr II	137
3288.81		Zr II	4,62	3299.511		Fe I	49	3308.246		V I	12
3288.972		Fe I	90	3299.77		Fe III	96	3308.391		Tf I	87
3288.985		V II	109	3299.771		Fe II		3308.4		Y II	64
3289.016		Mo I	11	3300.056		Fe II	228	3308.480		V II	137
3289.06		K III	4	3300.148		Nd II		3308.482		Co I	155
3289.150		Gd II	75	3300.152		Ce II	166	3308.517		Gd II	4
3289.347		Fe II	65	3300.20		Fe III	96	3308.688		Co I	105
3289.36		Yb II	1	3300.819		W I	5	3308.75	P	Fe I	190
3289.391		V II	7	3300.905		V II	60	3308.785		Mn I	11
3289.442		Fe I	380	3300.976		Gd II	74	3308.806		Ti II	7
3289.80		Cl III	2	3301.09		Fe III	50	3308.814		Co I	153
3290.13		O II	23	3301.21		Cr II	137	3308.86		P II	4
3290.23		Pt I	1	3301.227		Fe I	380	3308.91	P	Ni I	107
3290.240		V II	108	3301.559		Os I	1	3309.176		V I	55
3290.54		Ni II	5	3301.56		O II	23	3309.32	P	Ni I	105
3290.69		Ni II	1	3301.587		Ru I	4	3309.32	P	Ti I	122
3290.722		Fe I	90	3301.66		V II		3309.40		Fe III	
3290.988		Fe I	95	3301.678		Sm II	21,48	3309.428		Ni I	
3291.001		Tm II	3	3301.71		Ti II	44	3309.501		Ti I	87
3291.04		V II	60	3301.734		Sr I	7	3309.53	P	Ti II	44
3291.44	P	Fe I	954	3301.87		Pt I	7	3309.582		Gd II	24
3291.47		A II		3301.88		A III	1	3309.730		Ti I	190
3291.676		V I	12	3301.927		Fe I	617	3309.78		Ne II	7
3291.75		Cr II	68	3301.95		Eu II	24	3309.804		Tm II	
3292.022		Fe I	680	3302.096		Ti II	8	3309.82		Cr I	161
3292.04		Fe III	7	3302.15		Pd I	3	3309.90		Zr II	72
3292.078		Ti I	62	3302.19		Fe III	37	3310.202		Ni I	38
3292.210		Gd II	74	3302.34		Na I	2	3310.347		Fe I	449
3292.22		Co I	153	3302.454		Tm II	7	3310.496		Fe I	679
3292.312		Mo II	6	3302.588		Zn I	4	3310.55		Ne II	23
3292.590		Fe I	91	3302.66		Zr II	85	3310.65		Cr II	120,158
3292.89	P	Fe II	136	3302.86		Cr I	161	3310.661		Sm II	31
3293.146		Fe I	51	3302.861		Fe II	1	3311.25		A III	1
3293.146		V II	235	3302.94		Na I	2	3311.30		Ne II	2
3293.210		Co I	154	3302.941		Zn I	4	3311.34		Zr II	34
3293.48	P	Ti II	57	3303.11		La II	45	3311.451		Fe I	27
3293.66		A II	83	3303.278		Mn I		3311.708		Sc II	41
3293.674		Ni I	90	3303.466		Fe II	1	3311.905		Mn I	10
3293.81		Cr I	219	3303.574		Fe I	449	3311.929		Cr II	51
3293.861		Co I	107	3303.881		Co I	47	3312.06		Cr I	78
3293.9		Y II	64	3304.01		Y II	66	3312.148		Co I	69
3293.95		A II		3304.119		Co I	154	3312.18		Cr II	51
3294.098		Co I	154	3304.31		Fe III		3312.215		Ce II	25
3294.220		Ru II	2	3304.36	P	Fe I	710	3312.232		Fe I	450a
3294.44		La II	155	3304.433		Fe II	93	3312.30		O III	3
3294.50		Fe III	14	3304.474		V II	136	3312.320		Ni I	106
3294.536		Co I	152	3304.523		Sm II	2	3312.39		Y II	65
3294.85		Fe III	37	3304.73		Cr II	120	3312.415		Sm II	21
3295.03		Zr II	36	3304.836		Ce II	103	3312.690		Ti I	190
3295.06	P	Fe II	93	3304.950		Ni I	108	3312.707		Fe II	1
3295.13		O II	23	3305.15		O II	23	3312.736		Sc II	41
3295.24		Fe III		3305.15		Zr II	2	3312.78		Cl II	8
3295.240		Fe II	79	3305.185		Sm II	35	3312.87		Hf I	3
3295.289		Ce II	147	3305.22		Fe III	7	3312.90	P	Ti II	56
3295.427		Cr II	51	3305.634		Fe II	79	3312.992		Ni I	106
3295.813		Sm II	13	3305.730		Co I	152	3313.08		Cr II	119
3295.814		Fe II	1	3305.75	P	Fe I	618	3313.116		Co I	153
3296.027		Mn I	11	3305.77		O III	8	3313.33		Eu II	24
3296.052		V II	162	3305.971		Fe I	91	3313.344		Al II	8
3296.41		Zr II	62	3306.053		Ti II	44	3313.470		Al II	8
3296.467		Fe I	250	3306.27		Zr II	3	3313.524		Mn I	30
3296.668		Gd II	21	3306.35	P	Fe I	544	3313.539		Sc II	35
3296.786		He I	9	3306.356		Fe I	91	3313.70		Zr II	61
3296.806		Fe I	619	3306.388		Sm II	48	3313.721		Cr I	161
3296.826		Fe II	92	3306.45		Cl II	37	3313.723		Fe I	50
3296.882		Mn I	12	3306.495		Fe I	680	3313.731		Gd II	24
3296.883		Ce II	247	3306.50		A II		3313.996		Fe II	1
3297.528		V II	108	3306.60		O II	23	3314	P	O VI	4
3297.68	P	Ti I	122	3306.703		Fe I	396	3314.06		Cr II	158
3297.684		Mo II	6	3306.879		Ti I	190	3314.070		Fe I	736
3297.74		Ne II	2	3306.94		Fe III	73	3314.073		Co I	43,149
3297.888		Fe II	91	3306.95		Cr II	150	3314.345		Co I	152
3298	P	O V	9	3306.98		La II	17	3314.393		Mn I	30
3298.02	P	Ni I	91	3307.013		Ni I	107	3314.422		Ti I	87
3298.104		Sm II		3307.015		Fe I	450	3314.450		Fe I	250
3298.133		Fe I	90	3307.017		Sm II		3314.49		Zr II	47
3298.139		V I	12	3307.044		Cr II	51	3314.50		S II	17
3298.21		Ti II	44	3307.156		Co I	69	3314.523		Ti I	87
3298.224		Mn I		3307.234		Fe I	617	3314.56	P	Cr I	182
3298.318		Cr I	161	3307.24		A II	83	3314.57		Cr II	150
3298.680		Co I	70	3307.362		Rh II	5	3314.60		Ne II	22
3298.72		La II		3307.445		V II	60	3314.721		Ce II	146
3298.738		V II	7	3307.53		Fe III	7	3314.742		Fe I	680
3299.079		Fe I	710	3307.534		Sr I	7	3314.756	Forb	Al II	8
3299.086		V I	55	3307.57	P	Fe II	65	3314.80	P	Fe II	93

I A	Type	Element	Multiplet No.
3314.862		V II	136
3314.876		Mn I	30
3314.883		Al II	8
3314.981		Al II	8
3315.035		Co I	154
3315.05		Pt I	1
3315.17	P	Fe I	618
3315.176		V II	71
3315.19		Cr I	78
3315.237		Ti I	190
3315.29		Cr II	51
3315.324		Ti II	65
3315.44		Cl II	8,37
3315.516	Forb	Al II	8
3315.53	P	Fe II	93
3315.53		V II	136
3315.590		Gd II	41
3315.608		Al II	8
3315.663		Ni I	22
3315.80		Fe III	73
3316.18	P	Fe II	5
3316.324		Mn I	11
3316.440		Mn I	30
3316.503		Cr I	255
3316.579		Sm II	
3316.79		Sc II	35
3316.86		Cl II	37
3316.873		V II	137
3316.875		Tm II	7
3317.038		Sc II	41
3317.121		Fe I	139
3317.295		V II	7
3317.305		Mn I	30
3317.693		Sc II	41
3317.70		S II	42
3317.797		Ce II	102
3317.912		V II	108
3317.93		Co I	69
3317.99		Hf II	4
3318.024		Ti II	7
3318.032		Na II	16
3318.055		Gd II	24
3318.14		N II	22
3318.362		Ti I	190
3318.398		Co I	45
3318.52		Zr II	35
3318.6		Y II	64
3318.60		Co I	151
3318.62	P	Fe II	136
3318.862		Fe II	135
3318.907		V II	137
3319.03		Zr II	4
3319.083		Ti II	8
3319.156		Co I	155
3319.258		Fe I	449
3319.478		Co I	154
3319.561		Co I	45
3319.75		Ne II	10
3319.78		Y II	64
3319.822		Co I	153
3319.89		Eu II	24
3320.14		Cl II	8
3320.155		Sm II	20
3320.257		Ni I	9
3320.29		Ne II	12
3320.422		Sc II	35
3320.438		Gd II	74
3320.57		Cl III	6
3320.650		Fe I	190
3320.693		Mn I	
3320.709		Sc II	41
3320.779		Ni I	108
3320.780		V II	149
3320.800		Fe I	396
3320.902		Mo II	6
3321.013		Be I	1
3321.086		Be I	1
3321.179		Sm II	40
3321.19		Cr I	182
3321.242		Ni I	92
3321.347		Be I	1
3321.348		Gd II	21
3321.491		Fe II	194
3321.539		V II	71
3321.588		Ti I	87
3321.700		Ti II	65
3321.857		Eu II	21
3321.912		Co I	106
3322.198		Co I	104,149
3322.231		Sr I	7
3322.310		Ni I	39
3322.40		K III	1
3322.474		Fe I	396
3322.69		Cr II	51
3322.936		Ti II	7
3322.98	P	Ti II	44
3322.99		Zr II	34
3323.066		Fe II	92
3323.092		Rh I	4
3323.35		Hf II	79
3323.39	P	Ti II	43
3323.53		Cr II	51
3323.660		Ti I	255
3323.731		V II	81
3323.737		Fe I	379
3323.75		Ne II	7
3323.896		Ti I	255
3324.01		S III	2
3324.03	P	Zr II	62
3324.060		Cr II	4
3324.10		Cr II	120
3324.346		Cr II	80
3324.372		Fe I	617
3324.541		Fe I	191
3324.58		N II	22
3324.61		Ti I	60
3324.67	P	Cr II	92
3324.72		Fe III	96
3324.754		Ti I	190
3324.838		Fe II	194
3324.87		S III	2
3325.012		Fe II	93
3325.155		Ti I	190
3325.229		Ti I	190
3325.240		Co I	70
3325.258		Sm II	
3325.329		Ce II	25
3325.365		Ti I	255
3325.468		Fe I	191
3326.16		O III	28
3326.194		W I	5
3326.21		La II	121
3326.27		Co I	46
3326.564		Co I	43
3326.590		Cr I	182
3326.639		Ti I	87
3326.670		Ni I	108
3326.68	P	Ti II	56
3326.74	P	Sc II	41
3326.762		Ti II	7
3326.81		Zr II	91
3326.991		Co I	152
3327.16		Ne II	2
3327.308		Mo I	9
3327.392		Ni I	90
3327.498		Fe I	190
3327.578		Tm II	12
3327.63		Fe II	64
3327.67		Zr II	11
3327.685		Na II	16
3327.89		Y II	18
3327.961		Fe I	86
3328.21		Hf II	10
3328.270		Nd II	40
3328.326		Ti I	255
3328.351		Cr II	4
3328.714		Ni I	20
3328.79		N II	22
3328.80		Cr I	160
3328.867		Fe I	617
3329.013		Co I	152
3329.053		Cr I	182
3329.06		Cl III	2
3329.07		La II	120
3329.070		Fe II	
3329.12		Cl II	37
3329.20		Ne II	12
3329.215		Mo II	6
3329.3		S II	17
3329.345		Gd II	74
3329.45		Cr II	150
3329.455		Ti II	7
3329.466		Co I	153
3329.532		Fe I	542a
3329.855		V I	55
3329.89		Fe III	18
3329.93		Mg I	4
3329.988		Sr I	7
3330.30		N II	22
3330.340		Gd II	
3330.40		O III	22,28
3330.620		Sn I	2
3330.668		Mn I	9
3330.78		Ne II	19
3330.880		Y II	85
3331.07		Sc II	35
3331.26	P	Ni I	107
3331.32		N II	22
3331.382		Gd II	8
3331.616		Fe I	191
3331.62		Fe III	73
3331.778		Fe I	144
3331.90		Zr II	11
3332.111		Ti II	65
3332.133		Gd II	73
3332.17		Mg I	4
3332.180		Ni I	
3332.42		Cl II	8
3332.49		O III	28
3332.73		Hf I	2
3332.879		Cr I	182
3333.00		O III	22
3333.16		Si II	6
3333.27		Fe III	18,73
3333.388		Co I	25
3333.41	P	Co I	71
3333.605		Cr I	
3333.606		Y II	64
3333.608		V II	59
3333.635		Sm II	52
3333.64		Cl II	8
3333.912		Ti I	25
3334.12	P	Co I	101
3334.146		Co I	23
3334.223		Fe I	190
3334.25		Zr II	58
3334.278		Fe I	617
3334.35		Ti I	190
3334.455		Ce II	25
3334.471		Nd II	42
3334.62		Zr II	21
3334.690		Cr I	
3334.87		Ne II	2
3334.925		Cr I	160
3335.192		Ti II	7
3335.28		Cr II	80
3335.403		Fe I	246
3335.46		Cr II	92
3335.482		V II	161
3335.513		Fe I	49
3335.59		Ni I	
3335.72	P	Fe I	307
3335.776		Fe I	379
3335.90	P	Fe II	76
3335.93		Cr II	119
3336.12		Ne II	46
3336.124		Sm II	31
3336.13		A III	3
3336.150		Os I	3
3336.16		Cl III	6
3336.16		Cr II	14
3336.180		Gd II	8
3336.25		Y II	66
3336.262		Fe I	618
3336.330		Cr II	4
3336.34	P	Fe II	76
3336.54	P	Fe I	450a
3336.69		Mg I	4
3336.78		O III	22,28
3336.97		Cr I	255
3336.984		Gd II	72
3336.998		Ti II	43
3337.014		Ni I	17
3337.171		Co I	25
3337.36	P	Ni I	122
3337.40		Ti I	190
3337.49		La II	45
3337.666		Fe I	304
3337.76	P	V II	136
3337.845		V II	184
3337.85		Ti II	55
3337.93		Zr II	74
3338.19	P	Fe II	5
3338.41		Zr II	61
3338.519		Co I	123
3338.522		Fe II	76
3338.643		Fe I	396
3338.72		Fe III	
3338.758		Ni I	54
3339.050		Ni I	104

I A	Type	Element	Multiplet No.
3339.063		Nd II	41
3339.15		Co I	148
3339.202		Fe I	190,446
3339.36		Fe III	7
3339.54		Ti I	178
3339.588		Fe I	502
3339.780		Co I	155
3339.804		Cr II	4
3339.810		Ru II	2
3339.84		Si II	6
3339.90		Cr II	92
3340.344		Ti II	7
3340.42		Cl III	2
3340.55		Zr II	3
3340.566		Fe I	139
3340.579		Sm II	6
3340.74		O III	3
3340.77		Ti I	190
3341.341		Co I	148
3341.554		Ti I	60,178
3341.77		A II	59
3341.868		Ce II	198
3341.875		Ti I	24
3341.875		Ti II	16
3341.906		Fe I	303
3341.98		Cr II	119
3342.151		Ti I	23
3342.225		Fe I	137
3342.298		Fe I	378
3342.46		W II	9
3342.51		Cr II	4
3342.707		Ti I	25
3342.734		Co I	105
3342.76	P	Fe I	396
3342.77		N III	7
3343.09		W II	13
3343.227		Cr I	159
3343.243		Fe I	88
3343.27		Sc II	35
3343.312		V II	234
3343.342		Cr I	159
3343.379		Ti I	178
3343.40		W II	8
3343.494		Sm II	
3343.530		Co I	151
3343.678		Fe I	449
3343.731		Mn I	9
3343.770		Ti II	7
3343.81		Zr II	85
3343.861		Ce II	159
3344.09	P	Fe I	450
3344.26		O III	22,28
3344.353		Sm II	39
3344.43		Ne II	2
3344.50		Cr I	160
3344.513		Ca I	11
3344.56		La II	45
3344.62	P	Ti I	25
3344.630		Ti I	178
3344.72		A III	3
3344.750		Mo I	9
3344.761		Ce II	165
3344.80		Zr II	72
3344.931		Ti I	178
3345.020		Zn I	4
3345.14		Cr I	218
3345.146		Co I	45
3345.352		Mn I	
3345.36		Cr I	218
3345.49		Ne II	10
3345.572		Zn I	4
3345.679		Fe I	141
3345.86		W II	17
3345.88		Ne II	10,12
3345.899		V II	244
3345.934		Zn I	4
3345.985		Gd II	8
3346.018		Cr I	112
3346.09		Cr I	
3346.310		Co I	45
3346.403		Mo II	6
3346.71		Cr I	112
3346.724		Ti II	7
3346.78		Cr I	112
3346.91	P	Ti II	43
3346.932		Co I	153
3346.942		Fe I	87
3346.99		Ca II	9
3347.10		Sb I	1
3347.269		Mo II	6
3347.298		Sm II	48
3347.507		Fe I	449
3347.70		Fe III	18
3347.72		P IV	1
3347.837		Cr II	4
3347.927		Fe I	138
3348.05		O III	28
3348.08		O IV	4
3348.112		Co I	103
3348.372		V II	136
3348.535		Ti I	25
3348.683		Sm II	
3348.844		Ti II	7
3349.035		Ti II	16
3349.072		Cr I	
3349.11		O IV	4
3349.17		Hf II	20
3349.322		Cr I	159
3349.34		Cr II	4
3349.399		Ti II	1
3349.68	P	Cr II	14
3349.739		Fe I	377
3349.967		Ce II	200
3350.097		Gd II	74
3350.209		Ca I	11
3350.284		Fe I	191
3350.361		Ca I	11
3350.42		Ni II	1
3350.474		Gd II	7
3350.548		Ti I	178
3350.548		Ti II	43
3350.68		O III	22
3350.875		Sm II	
3350.94		A II	109
3350.99		O III	22
3351.06	P	Ni I	3
3351.138		Co I	151
3351.246		Sr I	7
3351.424		Mn I	9
3351.456		Al II	26
3351.529		Fe I	89
3351.53		V II	234
3351.596		Cr I	160
3351.67		Ti II	124
3351.750		Fe I	304
3351.966		Cr I	5
3351.97		Sn II	2
3352.048		Sc II	4
3352.06		Hf II	6
3352.071		Ti II	54
3352.43	P	Ti I	169
3352.80		Co II	2
3352.929		Fe I	190
3352.937		Ti I	25
3353.026		Cr I	255
3353.12		Cr II	4
3353.262		Ce III	2
3353.268		Fe I	190
3353.39		Cl II	4
3353.63		Ne II	23
3353.65		Zr I	18
3353.734		Sc II	12
3353.776		V II	107
3353.78		N III	5
3354.068		Fe I	378
3354.185		Sm II	39
3354.213		Co I	152
3354.29		N III	5
3354.31		O IV	8
3354.374		Co I	23
3354.39		Zr II	34
3354.54	P	Ti II	64
3354.550		He I	8
3354.621		Nd II	71
3354.634		Ti I	24
3355.05		Ne II	2
3355.228		Fe I	617
3355.366		V II	149
3355.47		N III	7
3355.517		Fe I	25
3355.92		O III	28
3355.940		Co I	103
3356.08		Zr II	3
3356.196		Ti I	178
3356.24	P	Fe II	105
3356.265		Fe II	
3356.332		Fe I	25
3356.35	P	Ce III	2
3356.35		Ne II	20
3356.352		V I	54
3356.407		Fe I	137
3356.464		Co I	104
3356.513		Gd II	24
3356.842		Co I	151
3357.07		Fe III	19
3357.215		Ce II	164
3357.26		Zr II	3
3357.40		Cr II	79
3357.40		Fe III	63,72
3357.72		Cr II	91
3357.82	P	Fe I	448
3357.90		Ne II	12
3357.965		Fe II	117
3358.003		Co I	123
3358.130		Mo I	9
3358.252		Fe II	77
3358.271		Ti I	23
3358.30		Hf II	63
3358.434		Gd II	41
3358.49		A III	3
3358.501		Cr II	4
3358.56	P	Ti I	169
3358.59		Co II	2
3358.62		W II	13
3358.620		Gd II	8
3358.72		N III	5
3358.74		Fe III	72
3358.78	P	Fe II	5
3359.066		Co I	69
3359.106		Ni I	108
3359.18		Fe III	72
3359.284		Co I	44
3359.496		Fe I	25
3359.50		V II	148
3359.679		Sc II	4
3359.814		Fe I	617
3359.96		Zr II	91
3360.103		Fe II	105
3360.15		O II	52
3360.16	P	Ti II	54
3360.295		Cr II	21
3360.45		Zr I	53
3360.541		Ce II	25
3360.63		Ne II	2
3360.711		Gd II	8
3360.84		Fe III	72
3360.935		Fe I	142
3360.990		Ti I	24
3361.07	P	Ti II	64
3361.09		C II	7
3361.11		W II	2
3361.213		Ti II	1
3361.241		Ni I	107
3361.263		Ti I	23
3361.270		Sc II	4
3361.371		Mo I	10
3361.50		Ti I	178
3361.506		V II	70
3361.553		Co I	157
3361.556		Ni I	19
3361.73		A II	109
3361.75		C II	7
3361.770		Cr II	21
3361.835		Ti I	25
3361.90		N III	5
3361.918		Ca I	11
3361.935		Sc II	4
3361.959		Fe I	377
3362.00		Y II	36
3362.131		Ca I	11
3362.213		Cr I	54
3362.233		Gd II	8
3362.28		Ca I	11
3362.38		O III	22
3362.619		Tm II	
3362.63	P	O IV	8
3362.653		Ti II	64
3362.70		Cr I	54
3362.70		Zr II	60
3362.764		Fe II	78
3362.806		Ni I	23
3362.89		Ne II	12
3363.501		Sc II	38
3363.613		Ni I	105
3363.71		Cr II	3
3363.81		Zr II	11
3363.815		Fe I	307
3363.83		O III	11
3363.974		Gd II	107
3364.10	P	Ti I	169

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3364.22	P	Fe II	5	3371.209		Sm II	52	3379.762		Mo II	6
3364.22		K III	5	3371.447		Ti I	24	3379.825		Cr I	54
3364.241		Gd II		3371.85		O II	52	3379.825		Cr II	21
3364.30	P	Ti II	43	3371.87		Ne II	22	3379.930		Ti II	64
3364.44		P IV	1	3371.90		S II		3380.004		Fe I	709
3364.591		Ni I	107	3371.993		Ni I	7	3380.111		Fe I	304
3364.639		Fe I	245	3372.070		Fe I	83	3380.114		Y II	41
3364.9		Ti II	124	3372.13		Cr II	91	3380.215		Mo II	6
3364.950		Nd II		3372.151		Sc II	4	3380.25		Eu II	23
3365.014		Co I	69	3372.208		Ti II	16	3380.278		Ti II	1
3365.413		Fe II	78	3372.359		Fe I	447	3380.515		Gd II	74
3365.54		A II	109	3372.666		V II	106	3380.574		Ni I	37
3365.553		V I	54	3372.68		Ca III	1	3380.711		Sr II	4
3365.591		Gd II	8	3372.70		P II	34	3380.885		Ni I	7
3365.640		Fe II	194	3372.800		Ti II	1	3380.91		La II	45
3365.766		Ni I	38	3373.02		Pd I	3	3381.003		Fe II	177
3365.79		N III	5	3373.226		Co I	122	3381.28		O IV	3
3365.863		Sm II		3373.42		Zr II	74	3381.33	P	O IV	3
3366.168		Ni I	8	3373.455		Ce II	244	3381.340		Fe I	376,677
3366.176		Ti I	178	3373.51		Fe III	18	3381.36	P	Fe II	5
3366.176		Ti II	54	3373.57		Sc II	38	3381.49		Co I	88
3366.333		Sr I	7	3373.729		Ce II	212	3382.07		Cr I	181
3366.46		Sc II	38	3373.87		A II	108	3382.071		Co I	123
3366.532		Gd II	74	3373.874		Fe I	303	3382.19		Fe III	72
3366.554		Ce II	99	3373.96		Cr I	181	3382.312		Ti I	86
3366.59		A II	83	3373.969		Co I	44	3382.399		Sm II	20
3366.790		Fe I	302	3373.98		Ni II	1	3382.403		Fe I	84
3366.807		Ni I	108	3374.06		N III	5	3382.529		V II	107
3366.870		Fe I	87	3374.10		Ne II	12	3382.683		Cr II	3
3366.880		V I	54	3374.221		Fe I	89	3382.69		O III	27
3366.960		Fe II	177	3374.221		Ni I	17	3382.79	P	Cr II	112
3367.00		O II	52	3374.352		Ti II	54	3382.890		Ag I	1
3367.02		Fe III		3374.512		Tm II	12	3383.15		Sb I	1
3367.05	P	Ne II	12	3374.584		Gd II	72	3383.387		Fe I	245
3367.093		Gd II	4	3374.642		Ni I	106	3383.57	P	Ti II	63
3367.111		Co I	22	3374.688		Gd II	24	3383.692		Fe I	85,444
3367.161		Fe I	142	3374.71		Zr II	61	3383.761		Ti II	1
3367.18		S III	2	3374.77		O II	96	3383.85		O III	27
3367.20		Ne II	19	3374.93		Cr I	181	3383.94		A II	92
3367.29	P	Ni I	96	3374.95		Cr II	4	3383.981		Fe I	83
3367.36		N III	5	3374.99		Cr II	149	3384.14		Hf II	44
3367.42		Cr II	79	3375.238		Co I	153	3384.24		Cr I	54
3367.53		Cr I	54	3375.50		O IV	8	3384.617		Mo I	9
3367.54		Fe III	17	3375.561		Ni I	108	3384.65		Cr I	54
3367.661		Gd II	91	3375.77		O II	52	3384.658		Sm II	30,39
3367.666		V II	170	3376.057		V I	54	3384.70		Hf II	9
3367.81		Ca III	4	3376.17		W II	10	3384.80	P	Fe I	25
3367.81		Zr II	11	3376.18		Cr I		3384.95		O III	27
3367.892		Ni I	20	3376.24	P	Fe II	78	3385.219		Co I	22
3368.054		Cr II	4	3376.25		Zr II	60	3385.31		Cr I	236
3368.09		S II		3376.27		Cr II	78	3385.55		O IV	3
3368.25	P	Fe I	678	3376.33		La II	46	3385.664		Ti I	24
3368.447		Fe II	134	3376.331		Ni I	104	3385.790		V II	183
3368.472		Ir I	5	3376.397		Cr I	254	3385.81		S II	
3368.568		Sm II	30	3376.46		A II	109	3385.944		Ti I	23
3368.626		Fe II	177	3376.68		Hf II	31	3386.129		Rh II	2
3368.63		Zr I	17	3376.72		Cr II	12,148	3386.22		Cl III	11
3368.67		Co I	101	3376.82		O III	27	3386.24		Ne II	12
3368.73		Cr II	91	3377.060		Co I	42	3386.452		Fe II	88
3368.946		Sc II	4	3377.127		Ce II	213	3386.50		Cr I	236
3368.983		Fe I	376	3377.20		O II	9	3386.724		Fe II	
3369.05		Cr II	68	3377.23		Ne II	42	3387.061		Co I	119
3369.054		Ti I	25	3377.36		Cr II	149	3387.13		S III	2
3369.055		Eu II	20	3377.394		V I	54	3387.410		Fe I	306
3369.14	P	Fe I	191	3377.45		Zr II	11	3387.466		Ni I	17
3369.212		Ti II	64	3377.485		Ti I	25	3387.47		Co I	45
3369.27		Zr II	85	3377.52		P II	12	3387.60		Cl III	2
3369.295		Ru II	2	3377.577		Ti I	23	3387.72		Co II	2
3369.349		Fe II	76	3377.625		V I	54	3387.73		Cr II	90
3369.40		O III	11	3377.77		Fe III	97	3387.834		Ti II	1
3369.455		Sm II	35	3378.09		O IV	4	3387.87		Zr II	74
3369.49		S III	2	3378.209		Sc II	38	3387.96		Cr II	112
3369.549		Fe I	304	3378.28		Ne II	7	3388.065		Gd II	71
3369.573		Ni I	6	3378.30		Zr II	73	3388.134		Fe II	77
3369.618		Gd II	21,73	3378.337		Cr II	21	3388.163		Co I	23
3369.67		Ti II	124	3378.676		Fe I	301	3388.18		Co II	2
3369.80	P	Fe II	76	3378.73	P	Fe I	137	3388.29		Zr II	2
3369.8086		Ne I	2	3378.736		Co I	121	3388.46		Ne II	19
3369.9081		Ne I	2	3379.017		Fe I	85	3388.54		A II	96
3370.23		O II	52	3379.171		Cr I	5	3388.71		Cr I	54
3370.322		Co I	24	3379.172		Ce II	98	3388.755		Ti II	53
3370.38		S III	2	3379.18		Sc II	43	3388.81	P	Fe I	140
3370.40		V II	88	3379.216		Ti I	24	3388.88		Cr I	90
3370.436		Ti I	23	3379.371		Cr II	21	3388.912		Gd II	73
3370.588		Os I	4	3379.39		Ne II	12	3388.966		Fe I	502
3370.786		Fe I	304	3379.397		Sc II	38	3389.325		Sm II	52
3370.94		Co II	2	3379.48		A II	59	3389.748		Fe I	87
3370.97		A II	57	3379.564		Cr I	54	3389.83		Hf II	8
3371.015		Co I	151	3379.58		A II		3390.082		Fe II	207
3371.10		P IV	1	3379.756		Gd II	91	3390.25	P	Fe I	188

I A	Type	Element	Multiplet No.
3390.25		O II	9
3390.37	P	O IV	3
3390.396		Co I	102
3390.498		Gd II	73
3390.515		Ce II	145
3390.56		Ne II	12
3390.682		Ti I	86
3390.77		Cr I	236
3390.783		Eu II	
3390.878		Gd II	73
3391.01		V II	121
3391.050		Ni I	5
3391.11		Cr I	236
3391.294		Gd II	73
3391.303		Fe II	117
3391.372		Cr I	254
3391.434		Cr II	3
3391.84	P	Fe I	678
3391.85		A III	6
3391.96		Zr II	1
3391.989		Eu II	17
3392.018		Fe I	499
3392.040		Th II	5
3392.304		Fe I	83
3392.530		Gd II	7
3392.652		Fe I	85
3392.659		V II	70
3392.713		Ti I	136
3392.78		Ne II	7
3392.89		Cl II	11
3392.992		Ni I	20
3393.00		Cr II	21
3393.12		Zr II	3
3393.382		Fe I	376
3393.45		Cl III	11
3393.609		Fe I	305,376
3393.630		Gd II	91
3393.641		Nd II	
3393.86		Cr II	21
3393.915		Fe I	136
3393.920		Ce II	46
3394.085		Fe I	188
3394.26		O III	27
3394.29		Sc II	38
3394.32		Cr II	21
3394.37	P	Ti II	63
3394.574		Ti II	1
3394.58		Hf II	7
3394.583		Fe I	81
3394.63		Zr II	85
3394.916		Co I	42
3394.92		V II	80
3394.99		Hf II	63
3395.120		Gd II	91
3395.336		Fe II	117
3395.370		Co I	25
3395.62		Cr II	100
3395.87	P	Fe I	543
3395.90	P	Fe I	189
3396.184		Ni I	122
3396.187		Sm II	44
3396.34		Zr II	58
3396.386		Fe I	25
3396.457		Co I	102
3396.50	P	Ni I	118
3396.58		Eu II	30
3396.66		Zr II	103
3396.71		Fe III	18
3396.83		O IV	3
3396.85		Rh I	3
3396.978		Fe I	26
3397.07		Lu II	4
3397.221		Fe I	503
3397.499		Tm II	3
3397.560		Fe I	447
3397.580		V I	54
3397.642		Fe I	26
3397.77		La II	128
3397.82		Ni II	8
3397.89		A II	59
3397.90		Ne II	36
3398.12	P	Fe I	615
3398.226		Fe I	304
3398.355		Fe II	105
3398.634		Ti I	86
3398.811		Co I	157
3399.230		Fe I	302
3399.336		Fe I	85
3399.36		Zr II	11
3399.406		Gd II	22
3399.54		Cr II	100
3399.80		Hf II	1
3399.951		Tm II	12
3399.991		Gd II	22
3400.08		Cr II	67
3400.110		Na II	4
3400.395		V I	46
3400.471		Co I	42
3401.067		Gd II	8
3401.166		Ni I	107
3401.521		Fe I	26
3401.617		Co I	44
3401.740		V II	106
3401.76		Ni II	4
3401.90		W II	9
3401.913		Co I	157
3401.997		V II	47
3402.064		Co I	123
3402.072		Gd II	91,149
3402.256		Fe I	614
3402.32	P	Fe II	105
3402.422		Ti II	53
3402.43		Cr II	21
3402.464		Sm II	39
3402.52		Zr II	85
3402.571		V I	46
3402.87		Zr II	91
3403.081		Gd II	73
3403.159		V II	135
3403.29	P	Cr II	21
3403.29	P	Fe I	377
3403.299		Fe I	304
3403.322		Cr II	3
3403.369		Ti I	86
3403.432		Ni I	108
3403.51		Fe III	61
3403.58		O IV	2
3403.59		Cr I	254
3403.69		Zr II	59
3404.301		Fe I	25,301
3404.34		P II	12,21
3404.357		Fe I	83
3404.43		V II	243
3404.60		Pd I	2
3404.755		Fe I	300
3404.77		Ne II	51
3404.84		Zr II	11
3404.923		Fe I	300
3404.97		Ti II	63
3405.038		Gd II	91
3405.094		Ti I	86
3405.120		Co I	23
3405.160		V I	46
3405.50	P	Ni I	122
3405.74		O III	15
3405.83		Fe I	299
3405.934		Mo I	9
3405.97	P	O IV	3
3405.977		Ce II	96
3406.06		V II	119
3406.17	P	Fe I	376
3406.18		Fe III	61
3406.442		Fe I	676
3406.76	P	Fe II	90
3406.803		Fe I	85
3406.837		V I	46
3406.88		Ne II	51
3407.00		La II	155
3407.06	P	Fe I	377
3407.205		Ti II	1
3407.22		Cr I	
3407.30		Ni II	4
3407.38		O II	44
3407.461		Fe I	83
3407.53	P	Fe I	81
3407.56		Gd II	91
3407.61		Gd II	24
3407.7		Y II	
3407.76		Hf II	29
3407.960		Mn I	26
3408.01		Cr I	
3408.09		Zr II	72
3408.13		O III	15
3408.136		N II	7
3408.14		Pt I	4
3408.676		Sm II	
3408.678		Cb II	3
3408.765		Cr II	3
3408.955		V II	120
3408.96	P	Cr II	8
3409.177		Co I	23
3409.191		Cb II	3
3409.20		Fe I	614
3409.297		Gd II	21
3409.36		Cr I	
3409.40	P	Fe I	445
3409.578		Ni I	5
3409.60	P	Cr II	8
3409.646		Co I	24
3409.75		O IV	3
3409.79	P	Cr II	8
3409.809		Ti II	1
3409.84		O II	44
3409.87		Y II	63
3410.031		Fe I	542
3410.171		Fe I	735
3410.18		Hf II	30
3410.26		Zr II	11
3410.46		V II	119
3410.56	P	Fe I	244
3410.74		Fe III	61,62
3410.905		Fe I	25
3411.01		Cr I	
3411.134		Fe I	299
3411.353		Fe I	301
3411.38		Ne II	45
3411.68	P	Ti II	63
3411.76		La II	155
3411.76		O IV	2
3411.88	P	Fe I	298
3412.020		Gd II	73
3412.339		Co I	25
3412.47	P	Ni I	90
3412.583		Gd II	70
3412.633		Co I	6
3412.753		Gd II	23
3412.934		Cb II	3
3413.13		Ne II	45
3413.135		Fe I	85
3413.273		Gd II	91
3413.39		Zr II	60
3413.46	P	Ni I	124
3413.478		Ni I	5
3413.71		O IV	2
3413.74		Hf II	20
3413.939		Ni I	17
3414.02		Ti II	127
3414.144		Fe II	91
3414.192		V II	135
3414.207		Gd II	107
3414.46		A II	107
3414.65		Zr II	73
3414.66		Zr I	17
3414.765		Ni I	19
3414.82		Ne II	20
3414.879		V II	135
3415.29		O III	15
3415.47		Cr II	100
3415.519		Co I	5
3415.530		Fe I	83
3415.67	P	Ni I	123
3415.78		Co II	2
3415.91		V II	169
3416.021		Fe II	16
3416.52	P	Fe I	708
3416.674		Sc I	21
3416.686		Fe I	142
3416.87		Ne II	21
3416.948		Gd II	22
3416.957		Ti II	53
3417.154		Co I	23
3417.273		Fe I	26
3417.330		Gd II	91
3417.353		Co I	135
3417.353		Ru I	3
3417.450		Ce II	100
3417.673		Co I	122
3417.71		Ne II	20
3417.795		Co I	19
3417.842		Fe I	81
3417.88	P	Ti I	86
3417.9036		Ne I	4
3418.02	P	Fe II	104
3418.151		Sm II	
3418.176		Fe I	577
3418.507		Fe I	81
3418.514		Sm II	47
3418.528		Sc I	21
3418.733		Gd II	7
3419.069		Gd II	24

I A	Type	Element	Multiplet No.
3419.10		Zr II	2
3419.157		Fe I	576
3419.25		P II	3
3419.358		Sc I	21
3419.49		Fe III	11,49
3419.706		Fe I	377
3419.87		O II	
3420.15		V II	119
3420.184		Fe II	89
3420.474		Co I	42
3420.54		La II	126
3420.61		O II	
3420.709		V II	105
3420.741		Ni I	9
3420.790		Co I	102
3420.795		Mn I	
3420.82		K III	1
3421.029		Co I	119
3421.20		Cr II	3
3421.22	P	Ni I	105
3421.24		Pd I	3
3421.342		Ni I	122
3421.62		Cr II	60
3421.628		Co I	101
3421.64		A II	57
3421.83		K III	4
3421.97		Fe III	11
3422.332		Ni I	105
3422.466		Gd II	2
3422.499		Fe I	444
3422.656		Fe I	85
3422.661		Ti II	63
3422.708		Ce II	144
3422.739		Cr II	3
3422.751		Gd II	8
3422.878		Ni I	122
3422.900		Co I	42
3423.172		Ti I	120
3423.35		Co I	121
3423.711		Ni I	20
3423.82		Zr II	
3423.85		Co II	2
3423.853		Ce II	131
3423.9		La II	144
3423.92		Gd II	7
3424.16		Y I	
3424.17	P	Fe II	116
3424.284		Fe I	81
3424.43	P	Cr II	8
3424.500		Co I	103
3424.592		Gd II	22
3424.64		Zr II	85
3424.82		Zr II	2
3424.88		P II	3
3425.009		Fe I	541
3425.022		Eu II	20
3425.070		V I	
3425.082		Tm II	7
3425.09	P	Cr II	8
3425.432		Cb II	7
3425.57		O IV	3
3425.582		Fe II	5
3425.624		Gd II	91
3425.630		Tm II	3
3425.930		Gd II	23
3425.96		Cr I	158
3426	P	O VI	6
3426.09	P	Fe I	502
3426.13		Cr II	111
3426.20		P II	3
3426.208		Ce II	44
3426.337		Fe I	135
3426.342		Gd II	73
3426.383		Fe I	25,82
3426.562		Cb II	7
3426.583		Ce II	51
3426.637		Fe I	82
3426.67	P	Fe I	615
3426.81	P	Fe II	103
3427.002		Fe I	26
3427.121		Fe I	81
3427.332		Ce III	2
3427.362		Gd II	91
3427.57		La II	132
3428.01	P	Fe I	616
3428.192		Fe I	81
3428.37		Hf II	2
3428.41	P	Fe I	302
3428.42	P	Ni I	123
3428.467		Gd II	90
3428.64	P	Fe II	90
3428.67		O III	15
3428.746		Fe I	836
3428.76		Ne II	42
3428.916		Al II	25
3428.94		Cr II	99
3428.955		Ti I	168
3429.206		Sc I	21
3429.42		Y II	77
3429.483		Sc I	21
3429.64		A II	107
3429.80	P	Fe I	244
3429.82	P	Fe I	540
3430.15	P	Fe II	89
3430.238		Gd II	91
3430.29		Zr I	17
3430.42		Cr II	67
3430.44		A II	59
3430.53		Zr II	11
3430.60		O III	15
3430.772		Ru I	3
3430.874		Ti I	120
3430.88	P	Fe I	614
3431.08	P	Ti I	135
3431.195		Tm II	12
3431.284		Cr I	53
3431.358		Sc I	21
3431.45	P	Cr II	8
3431.57		Zr II	59
3431.582		Co I	6
3431.59		Cr I	53
3431.69		Cr I	53
3431.815		Fe I	376,676
3431.995		Cr I	53
3432.023		Fe I	377
3432.12	P	Cr II	8
3432.31		Cr I	53
3432.318		Co I	102
3432.32		Cr II	8
3432.41		Zr II	58
3432.64		A II	107
3432.708		Cb II	
3432.81		La II	113
3432.97		Fe III	67
3432.994		Gd II	22
3433	P	O VI	8
3433.045		Co I	23
3433.091		Ce II	249
3433.30		Cr II	3
3433.44		Pd I	11
3433.558		Ni I	19
3433.598		Cr I	52
3433.767		V II	134
3433.90		Zr II	58
3434	P	O VI	9
3434.024		V II	104
3434.029		Fe I	300
3434.112		Cr I	52
3434.46		V II	134
3434.57	P	Rh II	1
3434.69	P	Ti I	121
3434.893		Rh I	2
3434.95	P	Fe I	776
3435.38		V II	133
3435.408		Ti II	98
3435.432		Ti I	
3435.488		Cr I	53
3435.489		Ni I	53
3435.555		Sc I	21
3435.679		Cr I	52
3435.819		Cr I	53
3436.045		Fe I	614
3436.112		Fe II	91
3436.187		Cr I	52
3436.304		Ce II	94
3436.393		V II	79
3436.737		Ru I	4
3437.006		Ir I	3
3437.046		Fe I	539
3437.16		Zr II	33
3437.162		N II	13
3437.280		Ni I	3
3437.631		Fe I	187
3437.680		Co I	162
3437.93		Cr II	111
3437.958		Fe I	614
3438	P	O VI	7
3438.10	P	Fe I	300
3438.14		A II	58
3438.23		Zr II	1
3438.24		Hf II	77
3438.306		Fe I	
3438.46		Cr II	110
3438.713		Co I	87
3438.97		Ne II	45
3438.978		Mn II	1
3439.050		Fe I	299
3439.208		Gd II	23
3439.305		Ti I	120
3439.352		Al I	2
3439.40		Sc I	21
3439.784		Gd II	22
3439.831		Ce II	197
3439.990		Gd II	7
3440.25	P	Fe II	156
3440.39		O III	13
3440.502		Sm II	54
3440.589		Cb II	6
3440.610		Fe I	6
3440.74	P	Fe I	301
3440.80		Ne II	45
3440.989		Fe I	6
3440.999		Eu II	13
3441.115		Cr I	52
3441.14	P	Cr II	8
3441.210		Ce II	45
3441.40		Pd I	10
3441.439		Cr I	52
3441.505		Tm II	
3441.700		Gd II	39
3441.983		Mn II	3
3442.044		Ni I	104
3442.12		Ne II	36
3442.239		Fe II	89
3442.364		Fe I	134
3442.380		Ce II	196
3442.559		Ni I	124
3442.58		Cr I	158
3442.672		Fe I	26
3442.79	P	Fe II	76
3442.918		Co I	6
3442.979		Fe I	499,776
3442.98	P	Co I	42
3443	P	N IV	7
3443.203		Cq I	
3443.387		Ti II	99
3443.57		Zr II	73
3443.609		Ce III	1
3443.644		Co I	22
3443.644		Ti I	120
3443.651		Al I	2
3443.70		Ne II	42
3443.790		Cr I	110
3443.83	P	Fe II	16
3443.878		Fe I	6
3443.989		Sc I	21
3444.10		O III	15
3444.251		Ni I	122
3444.306		Ti II	6
3444.34		Cr II	111
3444.403		Ti I	120
3444.76	P	Fe II	145
3444.871		Al I	2
3444.899		Ti I	46
3445	P	N IV	7
3445.04		Cr II	110
3445.10		Cr I	51
3445.151		Fe I	81
3445.20	P	Cr II	148
3445.566		Ti I	46
3445.58	P	Fe II	76
3445.618		Cr I	51
3446.0	P	Mn II	9
3446.085		Mo II	1
3446.088		Co I	162
3446.263		Ni I	20
3446.38		K I	4
3446.40		Co II	2
3446.603		Ti I	168
3446.721		Ce II	56
3446.73		O III	25
3446.77		Fe III	88
3446.791		Fe I	244
3446.947		Fe I	26
3447.015		Cr I	52
3447.22		O III	25
3447.278		Fe I	82
3447.281		Co I	161
3447.36		Zr I	16
3447.41		K I	4

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3447.430		Cr I	52	3457.047		Gd II		3465.25		V II	160
3447.594		He I	7	3457.088		Y II	77	3465.562		Ti II	99
3447.760		Cr I	52	3457.090		Fe I	374,835	3465.57		Cr I	51
3447.98		O II	27	3457.153		V II	147	3465.62		Ni II	4
3448.05	P	O III	25	3457.16	P	Ne II	51	3465.63		Zr I	17
3448.19	P	Fe I	186	3457.298		Ti I	46	3465.792		Co I	5
3448.255		Ti I	46	3457.494		Ti I	46	3465.80		A II	96
3448.358		Co I	163	3457.512		Fe I	187	3465.863		Fe I	6
3448.433		Fe II	90	3457.56		Zr II	20	3466.15		O III	25
3448.478		Fe I	444	3457.62		Cr II	135	3466.25		Cr II	77,148
3448.503		Sc I	21	3457.809		Mn II	9	3466.279		Fe I	185
3448.542		Mo II	1	3457.99		O II	81	3466.336		Mn II	12
3448.63	P	Fe III	27	3458.020		Ti I	46	3466.34		A II	44,56
3448.69		V II	118	3458.028		Co I	101	3466.498		Gd II	53
3448.786		Fe I	372	3458.090		Cr I	253	3466.501		Fe I	24
3448.82		Y II	17	3458.13	P	Fe II	10	3466.59		V II	58
3448.869		Fe I	242	3458.18		Fe III	100	3466.85	P	Fe II	156
3448.967		Ir I	1	3458.230		Al I	2	3466.90		O III	25
3449.06	P	Fe I	442	3458.304		Fe I	139	3466.952		Gd II	23
3449.170		Co I	22	3458.474		Ni I	19	3467.022		Cr I	141,253
3449.28		Cr II	111	3458.91		Fe III	27	3467.09	P	Cr II	2
3449.441		Co I	22	3458.93		Zr II	58	3467.12		Ni I	123
3449.5	P	Mn II	9	3459.03		Ti II	125	3467.260		Ti I	84
3449.616		Gd II	7	3459.07		O II	81	3467.267		Gd II	22
3449.874		Ti I	46	3459.29		Cr II	136	3467.33		V II	58
3450.00	P	Cr I	90	3459.29	P	Fe I	576	3467.502		Ni I	3
3450.14	P	Fe I	242	3459.374		Ce III	3	3467.715		Cr I	110
3450.328		Fe I	82	3459.38		Ne II	51	3467.732		Ni I	123
3450.376		Gd II	22	3459.429		Fe I	297	3467.874		Sm II	54
3450.735		Ti I	46	3459.431		Ti I		3467.88		Y II	17
3450.84		Cr II	60	3459.52		O III	25	3468.083		Gd II	21
3450.94		O III	25	3459.61	P	Fe I	577	3468.113		Ce II	178
3451.046		V II	118	3459.911		Fe I	501	3468.32		K II	1
3451.228		Fe II	208	3459.95	P	Fe I	133	3468.476		Ca I	10
3451.233		Gd II	22	3459.95		Zr II	90	3468.680		Fe II	114
3451.318		Fe II		3459.98		O II	25	3468.849		Fe I	242
3451.33		O III	25	3460.03		Cr II	60	3468.973		Co I	159
3451.41		B II	1	3460.038		Mn II	1	3468.989		Gd II	40
3451.614		Fe II	207	3460.31		La II	119	3469.012		Fe I	614
3451.628		Fe I	139	3460.312		Mn II	3	3469.307		Gd II	39
3451.66	P	Fe I	241	3460.430		Cr I	141	3469.390		Fe I	375
3451.88		Re I	2	3460.47		Re I	2	3469.486		Ni I	8
3451.914		Gd II	70	3460.719		Co I	35	3469.528		V II	58
3451.915		Fe I	81	3460.76		Pd I	2	3469.590		Cr I	141
3452.18		Co I	160	3460.776		Gd II	73	3469.683		Co I	137
3452.18		La II	30	3461.0		Y II	40	3469.834		Fe I	242
3452.273		Fe I	25	3461.173		Co I	162	3469.94		Zr II	59
3452.31	P	Fe III	49	3461.28		Cr II	148	3470.18		Y II	40
3452.33	P	Fe II	89	3461.34		N IV	7	3470.242		Fe II	89
3452.470		Ti II	99	3461.38		Eu II	13	3470.263		V II	58
3452.55		Fe III	88	3461.496		Ti II	6	3470.27		A II	
3452.670		Al I	2	3461.580		V II	6	3470.401		Cr I	77
3452.890		Ni I	17	3461.652		Ni I	17	3470.42		O II	27
3453.022		Fe I	301	3461.952		Gd II	23	3470.529		Cr I	77
3453.087		V II	132	3462.040		Rh I	3	3470.657		Rh I	3
3453.10		Ne II	21	3462.108		Tm II		3470.72		Cr I	77
3453.17		La II	46	3462.353		Fe I	79	3470.81		O II	27
3453.23		Cr I	253	3462.494		Na II	4	3470.83		P II	12
3453.31		O II	71	3462.65		Hf II	6	3470.866		Nd II	70
3453.328		Cr I	52	3462.73		Cr II	2	3470.894		Ce III	1
3453.514		Co I	22	3462.748		Mn I	41	3471.14		Zr II	114
3453.595		Fe II		3462.804		Co I	23	3471.18		Zr I	15
3453.654		Ti I	46	3462.808		Fe I	373	3471.27		Fe I	82
3453.665		Tm II	7	3462.878		Mn II	12	3471.35		Ni II	4
3453.743		Cr I	52	3462.997		Gd II	8	3471.350		Fe I	130
3453.78		V II	132	3463.02		Zr II	90	3471.382		Co I	161
3453.84	P	Cr I	90	3463.079		V II	104	3471.49		Cr I	77
3454	P	N IV	7	3463.205		Ti I	85	3471.59		A II	57
3454.10		A II	44	3463.305		Fe I	48	3471.63	P	Ni I	124
3454.145		Gd II	7	3463.330		Mn II	12	3471.80		He I	44
3454.16		Ni II	1	3463.36		N IV	7	3472.07		Cr II	135
3454.165		Ti I	168	3463.499		Co I	42	3472.196		Co I	161
3454.35		Fe III	86	3463.52		W II	7	3472.38		Hf I	1
3454.368		Ce III	2	3463.63		Al II	55	3472.48		Lu II	4
3454.57		Zr II	59	3463.831		V II	168	3472.545		Ni I	20
3454.90		O III	25	3463.974		Fe II	4	3472.5711		Ne I	2
3454.904		Gd II	7	3463.984		Gd II	40	3472.707		Co I	160
3454.98		Cr II	136	3464.02		Cr II	2	3472.764		Cr I	77
3455.04		Mn I	41	3464.043		Mn II	12	3472.793		Ti I	271
3455.12		O III	25	3464.132		Gd II	90	3472.88		P II	2
3455.237		Co I	6	3464.14		A II	70	3472.886		Fe II	156
3455.281		Cr I	51	3464.17		V II	104	3472.906		Cr I	111
3455.602		Cr I	51	3464.27		Fe III	16	3473.01	P	Fe I	576
3455.755		Ti I	46	3464.457		Sr II	4	3473.219		Gd II	7
3456.00	P	Fe II	4	3464.497		Fe II	114	3473.23	P	Fe I	576
3456.390		Ti II	99	3464.72		Re I	2	3473.497		Fe I	26
3456.661		Ti I	134	3464.82		Cr I	51	3473.612		Cr I	77
3456.68		Ne II	28	3464.914		Fe I	241	3473.82		Fe III	27
3456.924		Co I	5	3465.037		Mn II	12	3473.825		Fe II	
3456.928		Fe II	76	3465.245		Cr I	51	3474.018		Co I	4,23

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3474.037		Mn II	3	3481.536		Cr I	110	3490.765		Ti I	22
3474.124		Mn II	3	3481.558		Fe I	132	3490.89		A II	30
3474.379		Cr I		3481.675		Ti I	271	3491.053		Ti II	6
3474.41	P	Fe III	27	3481.750		Tm II	10	3491.16		Fe III	103
3474.530		Co I	24	3481.797		Gd II	22	3491.19	P	Ti II	118
3474.56		N IV	7	3481.92	P	Fe II	102	3491.24		A II	44
3474.763		Ca I	10	3481.96		Ne II	6	3491.316		Co I	6
3474.780		Rh I	2	3482.05	P	Fe II	10	3491.54		A II	44
3474.84		La II	143	3482.06		Mn II	9	3491.954		Gd II	6
3474.87		Cr I	141	3482.36		Fe III	103	3491.987		Co I	159
3474.887		Sr II	4	3482.39	P	Fe II	133	3492.24		O IV	14
3474.94		Fe III	90	3482.426		Fe II		3492.39		Ti II	125
3474.94		O II	8	3482.56	P	Cr II	148	3492.956		Ni I	18
3475.13		Cr II	2	3482.58		Al I	17	3493.163		V II	6
3475.25	P	Fe II	4	3482.58		Cr II	67	3493.280		Ti I	22
3475.25		Ne II	35	3482.602		Gd II	40	3493.29		Fe I	48
3475.36	P	Cr I	141	3482.70		Si III		3493.34	P	Fe II	102
3475.450		Fe I	6	3482.73		Ni I	120	3493.468		Fe II	114
3475.651		Fe I	78	3482.905		Mn II	3	3493.57	P	Fe I	327
3475.74	P	Fe II	4	3482.98		N IV	1	3493.69		Fe I	297
3475.867		Fe I	186,373	3483.006		Fe I	24	3494.15		Fe I	137
3476.252		V II	58	3483.010		Ti I	22	3494.25	P	Fe I	185
3476.336		Fe I	133,835	3483.410		Co I	23	3494.404		Gd II	7
3476.360		Co I	161	3483.54		Zr II	33	3494.52		Cr II	2
3476.452		Ti I	85	3483.59	P	Zr II	103	3494.66		O II	70
3476.63		Ni I	123	3483.62	P	Ni I	120	3494.672		Fe II	16
3476.704		Fe I	6	3483.774		Ni I	6	3494.703		Ni I	154
3476.74		A II	44	3483.80		Co I	5	3494.967		Cr I	109
3476.842		Ce II	132	3483.80		Ti II	125	3495.16	P	Fe I	102
3476.853		Fe I	242	3484.15		Cr II	2	3495.285		Fe I	238
3476.982		Ti II	6	3484.16	P	Cr II	185	3495.37		Cr II	2
3477.007		Fe I	139	3484.18		Fe III	100	3495.44		O II	70
3477.161		Cr I	141	3484.32		V II	168	3495.56		Cr II	
3477.181		Ti II	6	3484.348		Fe II	115	3495.6	P	Ni II	4
3477.514		V II	58	3484.39		La II	113	3495.616		Fe II	115
3477.69		Ne II	21	3484.65		V II	6	3495.682		Co I	22
3477.828		Rh II	4	3484.84		Fe I	185	3495.75		Hf II	10
3477.836		Co I	161	3484.90		N IV	1	3495.754		Ti I	84
3477.850		Fe I	82	3484.97		Fe I	138	3495.831		Mn II	3
3477.864		Ni I	124	3485.054		Ce II	44	3495.94		Hf II	30
3477.98	P	Fe I	836	3485.110		Ni I	118	3495.960		Ti I	22
3478.17		Cr II	109	3485.16		Hf II	43	3496.070		Co I	136
3478.24		A II	45	3485.31		Zr II	57	3496.08		Y II	3
3478.29		Zr II	2	3485.342		Fe I	78	3496.18		Zr II	1
3478.292		Ni I	173	3485.368		Co I	162	3496.19		Fe I	186
3478.382		Fe I	185	3485.689		Ti I	84	3496.27		O II	7
3478.50		Zr II	84	3485.700		Co I	68	3496.27	P	V II	131
3478.55	P	Fe II	16	3485.728		Fe II	133	3496.29		Fe III	103
3478.555		Co I	120	3485.82	P	V II	131	3496.29	P	Ti II	118
3478.69		N IV	1	3485.867		V I	81	3496.350		Ni I	118
3478.74		P II	2,18	3485.888		Ni I	17	3496.60	P	Fe I	572
3478.744		Co I	67	3485.916		V II	6	3496.67	P	Fe II	88
3478.77		Cr I	141	3486.08	P	Fe II	102	3496.681		Co I	19
3478.788		Fe I	137	3486.14		W II	11	3496.794		Co I	161
3478.79		Cb II	7	3486.556		Fe I	79	3496.814		Mn II	3
3478.906		Rh I	6	3486.93		Si III		3497.00	P	V II	131
3478.918		Ti I	84	3487.008		V I	81	3497.00		Zr II	10
3478.961		V II	182	3487.11		Fe III	90	3497.031		V II	146
3478.97		He I	43	3487.33		A II	56	3497.115	P	Fe I	78
3478.98		Hf II	61	3487.57		Hf II	55	3497.137		Fe I	78
3479.02		Zr II	20	3487.598		Ca I	10	3497.340		S III	
3479.14		Cr I	141	3487.712		Co I	65	3497.39		V II	131
3479.264		Ni I	105	3487.721		He I	42	3497.49		Hf I	1
3479.27		Al I	17	3487.80	P	Ti I	119	3497.536		Mn II	3
3479.29		Hf II	2	3487.990		Fe II	4	3497.73	P	Fe II	114
3479.39		Zr II	46	3488.18		O II	7	3497.81	P	Fe II	133
3479.53		Ne II	49	3488.293		Ni I	121	3497.843		Fe I	6
3479.567		Cb II	6	3488.453		Cr I	109	3497.89	P	Fe I	499
3479.683		Fe I	443,812	3488.553		Ce II	187	3497.90		Zr II	58,84
3479.78		Al I	17	3488.676		Mn II	3	3498.12	P	V II	131
3479.82		Cl II		3488.92		Fe III	60	3498.18	P	Fe I	326
3479.837		V II	6	3489.07		Cr II	135	3498.19	P	Ni I	2
3479.914		Fe II	4	3489.07	P	Fe III	26	3498.641		He I	40
3480.012		Co I	67	3489.17	P	Fe II	102	3498.83	P	V II	117
3480.183		Ni I	123,124	3489.281		Gd II	106	3498.942		Ru I	4
3480.28		Cr I	141	3489.399		Co I	36	3499.099		Ti I	84
3480.40		Zr II	58	3489.45		Cr II	109,185	3499.49		A II	5
3480.52		A II	57	3489.48	P	Fe III	27	3499.57		Fe III	26
3480.525		Ti I	84	3489.670		Fe I	442	3499.58		Zr II	9
3480.547		Gd II	23	3489.739		Ti II	6	3499.67		A III	2
3480.55		A III	2	3489.79		Pd I	8	3499.823		V II	5
3480.75		Ne II	49	3489.84		O IV	14	3499.877		Fe II	115
3480.897		Ti II	22	3489.947		V II	131	3500.15		Zr II	123
3481.11		K III	3	3490.04	P	Fe I	331	3500.29		Fe III	48
3481.126		Ti I	271	3490.45		P II	19	3500.340		Ti II	6
3481.14		Zr II	46	3490.47	P	Fe I	835	3500.5		O II	80
3481.17		Pd I	2	3490.575		Fe I	6	3500.564		Fe I	238
3481.275		Gd II	22	3490.62		He I	41	3500.852		Ni I	6
3481.303		Cr I	77	3490.736		Co I	20	3501.107		Ba I	3
3481.44		Zr II	59	3490.74	P	Fe I	133	3501.32	P	Fe III	48

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3501.33		Zr I	14	3509.843		Co I	22	3518.632		Gd II	7
3501.416		F II	3	3509.844		Ti II	88	3518.634		Ni I	124
3501.453		Ce II	87	3509.870		Fe I	78	3518.68		Fe I	327
3501.67		O II	70	3509.971		Mn II	9	3518.75		Hf II	43
3501.73		Co II	2	3510.00		La II	15	3518.86		Fe I	78
3501.75		Fe III	26,48	3510.133		Gd II	21	3519.077		Ce II	92
3502.2	P	O IV	13	3510.18	P	Fe I	836	3519.24		Tl I	2
3502.278		Co I	21	3510.262		Cb II		3519.25		Fe III	54
3502.381		He I	39	3510.338		Ni I	18	3519.60		Zr I	13
3502.46	P	Fe I	576	3510.40		Cr I	263	3519.67	P	Ti II	118
3502.524		Rh I	2	3510.426		Co I	6	3519.72	P	Fe II	88
3502.595		Ni I	3	3510.443		Fe I	139	3519.766		Ni I	5
3502.63		Co I	6	3510.46		Zr II	20	3519.85		Fe III	59
3502.85	P	Fe I	577	3510.538		Cr I	109	3519.939		Ti I	22
3502.954		F II	3	3510.840		Ti II	88	3520.00		A II	56
3502.998		Co I	135	3511.227		Sm II	12	3520.022		V II	5
3503.00		P II	2	3511.25	P	Fe II	102	3520.075		Co I	4
3503.095		F II	3	3511.42		V II	57	3520.253		Ti II	98
3503.206		Gd II	90	3511.55		Zr II	124	3520.4717		Ne I	7
3503.36		Cr II	157	3511.613		Ni I	152	3520.522		Ce II	55
3503.38		Cr I	109	3511.626		Ti I	22	3520.547		V II	57
3503.474		Fe II	4	3511.748		Fe I	238	3520.55		Cr I	235
3503.58		A III	2	3511.84		Cr II	2	3520.72		La II	127
3503.61		Ne II	28	3511.93		Fe III	26	3520.85		Fe I	238
3503.717		Co I	88	3511.94		Ni I	124	3520.87		Zr II	19
3503.760		Ti I	22	3512.08		Fe I	327	3520.9	P	O IV	13
3503.96	F	Fe III	48	3512.13		V II	193	3520.91	P	Zr II	59
3504.40		Fe III	48	3512.219		Gd II	38	3521.09		Eu II	24
3504.432		V II	6	3512.239		Fe I	326	3521.264		Fe I	24
3504.455		Fe I	371	3512.34	P	Fe III	26	3521.27		A II	56
3504.48		Sb I	2	3512.496		Gd II	89	3521.28	P	Zr II	84
3504.596		Ce III	6	3512.511		He I	38	3521.53		Cr I	263
3504.728		Co I	135	3512.640		Co I	21	3521.567		Co I	20
3504.773		Ti I	167	3512.67		Zr II	57	3521.64	P	Fe II	10
3504.966		Fe I	131	3512.68	P	Fe I	327	3521.731		Co I	24,100
3504.890		Ti II	88	3512.70		Cr I	109	3521.833		Fe I	78
3505.065		Fe I	498	3512.74	P	Fe I	613	3521.836		V II	57
3505.133		Co I	160	3512.80	P	Fe I	330	3521.880		Ce II	211
3505.22		Hf II	7	3512.93		La II	44	3521.98		A II	45
3505.44		Cl II	64	3512.95		Fe I	501	3522.044		Nd II	71
3505.45	P	Ti II	6	3513.03		Cr II	107	3522.05	P	Fe II	10
3505.47		Zr II	90	3513.065		Fe I	48	3522.063		Mo II	1
3505.512		Gd II	22	3513.09		Ti II	6	3522.13		Cr II	184
3505.614		F II	3	3513.22		Cl II	64	3522.14		Cl II	64
3505.67		Zr II	1	3513.478		Co I	5	3522.268		Fe I	326
3505.690		V I	81	3513.59	P	Fe I	327	3522.72		Ne II	35
3505.901		Ti II	88	3513.638		Ir I	2	3522.73	P	Fe I	538
3506.02		O II	70	3513.69		Cl II	64	3522.856		Co I	159
3506.04		Zr II	84	3513.820		Fe I	24	3522.896		Fe I	330
3506.23		Fe I	327	3513.877		V II	117	3523.02		Hf I	3
3506.310		Co I	21	3513.88		K III	1	3523.074		Ni I	34
3506.40		Fe I		3513.933		Ni I	17	3523.18	P	Fe I	673
3506.48		Zr II	84	3513.933		Ni II	1	3523.30		Fe I	326
3506.498		Fe I	130	3514.21		Co II	1	3523.423		Co I	21
3506.57		V II	193	3514.29	P	Fe III	27	3523.444		Ni I	16
3506.58	P	Fe I	327	3514.39		A II	44	3523.47	P	Ni I	154
3506.61		Cr II	108,157	3514.422		V II	57	3523.701		Co I	66
3506.643		Ti I	22	3514.48	P	Fe I	47	3524.04	P	Fe I	238
3506.843		V I	81	3514.62		Fe I	183	3524.075		Fe I	239
3506.93		Fe III	48	3514.64		Zr II	114	3524.196		Gd II	6
3507.14	P	Fe I	835	3514.87		Fe III	26	3524.236		Fe I	130
3507.316		Rh I	2	3515.054		Ni I	19	3524.54	P	Cr II	107
3507.37		P II	18	3515.41	P	Fe I	243	3524.541		Ni I	18
3507.387		Fe II	16	3515.421		Cb II	6	3524.646		Mo II	1
3507.39		Fe I	500	3515.538		Be I	7	3524.713		V II	5
3507.39		Lu II	1	3515.57		Fe III	54	3524.87		Ti II	118
3507.426		Ti I		3515.818		Fe II	208	3525.161		Ti I	167
3507.534		V II	159	3516.00		V II	6	3525.17		Fe III	60
3507.66		Zr II	58	3516.05		Al II	54	3525.44		Cr I	
3507.694		Ni I	3	3516.234		Ni I	123	3525.81		Zr II	9
3507.945		Ce II	51	3516.403		Fe I	442	3525.856		Fe I	329
3507.964		Y II	47	3516.55		Fe I	326	3525.872		Co I	63
3508.09		Cr I		3516.58	P	Fe III	54	3526.016		Fe I	240
3508.213		Fe II	4	3516.675		Co I	65	3526.039		Fe I	6
3508.470		Ce II	114	3516.838		Ti I	167	3526.13		Cl II	64
3508.494		Fe I	442	3516.92		O II	69	3526.167		Fe I	24
3508.52		Fe I	239	3516.95		Pd I	1	3526.23		Fe I	327
3508.67	P	Cr II	77	3517.03	P	Ni I	123	3526.377		Fe I	326
3508.731		Eu II	13	3517.14		La III	1	3526.465		Fe I	131
3508.81		Cr I		3517.298		V II	6	3526.540		Ni I	155
3508.852		Eu II	13	3517.327		He I	37	3526.673		Fe I	326
3508.94		Cl II	64	3517.380		Ce II	230	3526.69	P	Fe I	497
3509	P	O VI	5	3517.48		Co II	1	3526.78	P	Fe I	321
3509.024		V II	117	3517.53	P	V II	57	3526.847		Co I	4
3509.12		Fe I	326	3517.890		Gd II	88	3526.96	P	Fe I	835
3509.20	P	V II	117	3517.90		A II	5	3527.08		Cr I	274
3509.32		Zr I	15	3518.23	P	Fe I	575	3527.11		P II	21
3509.39		Cl II	64	3518.340		Co I	36	3527.42		Zr II	103
3509.73	P	Fe I	327	3518.61		P II	2	3527.792		Fe I	326
3509.78		A II	44	3518.62		Cr II	107	3527.867		V II	117

FINDING LIST

I A	Type	Element	Multiplet No.
3527.90	P	Fe I	296
3527.982		Ni I	6
3528.024		Rh I	3
3528.23		Cr II	109
3528.24	P	Fe I	182
3528.545		Gd II	23
3528.602		Os I	1
3528.891		Ni I	154
3528.94	P	Fe I	23
3529.032		Co I	5
3529.38		Tl I	2
3529.531		Fe I	537
3529.57		W II	12
3529.625		Ni I	76
3529.73		Cr II	89
3529.735		V I	53
3529.816		Co I	22
3529.818		Fe I	326
3529.99		Zr II	84
3530.03		Cl III	10
3530.22		Zr I	52
3530.25		P II	21
3530.385		Fe I	326
3530.45		V II	57
3530.487		He I	36
3530.580		Ti I	22
3530.595		Ni I	121
3530.600		Sm II	20
3530.67		La II	12
3530.75		K II	7
3530.765		V II	5
3530.85		Zr II	114
3531.151		Eu II	24
3531.22		A II	5
3531.43		Fe I	182
3531.44		Cr I	263
3531.48		V II	4
3531.848		Mn I	18
3531.998		Mn I	18
3532.121		Mn I	18
3532.19		A II	57
3532.285		V II	192
3532.647		Fe II	132
3532.65		N I	
3532.69	P	Fe II	75
3532.888		Cr I	
3533.008		Fe I	326
3533.043		Na II	1
3533.19	P	Fe II	75
3533.201		Fe I	326
3533.22		Zr I	14
3533.356		Co I	5
3533.67		P II	21
3533.676		V I	53
3533.757		V I	53
3533.868		Ti II	98
3533.97		O II	69
3534.051		Ce II	44
3534.14		V II	12
3534.52		Fe I	811
3534.688		Mo II	1
3534.769		Co I	118
3534.914		Fe I	48
3535.04		Mg II	12
3535.16		Zr I	59
3535.18	P	V II	4
3535.304		Cb I	4
3535.33		A II	44
3535.408		Ti II	98
3535.522		Tm II	
3535.54		Hf II	9
3535.628		Fe II	75
3535.653		Sm II	44
3535.729		Sc II	11
3536.30		P II	20
3536.556		Fe I	326
3536.576		Tm II	3
3536.820		He I	35
3536.838		F II	6
3536.89		Cr I	50
3536.94		Zr II	10
3537.243		Ni I	153
3537.25		Cr I	50
3537.491		Fe I	239
3537.634		Ni I	120
3537.707		Co I	68
3537.729		Fe I	239
3537.75		Ca III	2
3537.896		Fe I	327
3537.99		Ne II	50
3538.142		Rh I	8
3538.238		V II	4
3538.31		Fe I	775
3538.55		Fe I	137
3538.77		Fe I	811
3538.86		Mg II	12
3539.00		Cr II	157
3539.05		Zr II	102
3539.086		Ce II	118
3539.589		Th II	1
3539.94		Ne II	50
3540.121		Fe I	329
3540.28	P	Cr II	89
3540.530		V I	45
3540.709		Fe I	23
3540.961		Cb II	4
3541.083		Fe I	326
3541.22	P	Fe I	47
3541.341		V II	145
3541.44		Ti IV	
3541.765		F II	6
3542.00		Ni I	119
3542.076		Fe I	326
3542.152		Eu II	17
3542.243		Fe I	128
3542.28		Ne II	50
3542.480		V II	145
3542.56	P	Fe I	321
3542.65		Zr II	113
3542.657		V I	45
3542.768		Gd II	51
3542.90		Ne II	34
3542.976		Co I	19
3543.09	P	Fe I	182
3543.16		A II	
3543.256		Co I	64
3543.352		Nd II	
3543.39		Fe I	183
3543.500		V I	53
3543.669		Fe I	734
3543.948		Rh I	6
3544.001		Y II	56
3544.631		Fe I	239
3544.88	P	Fe I	154
3544.985		Gd II	51
3545.03		Co II	1
3545.16		Ni I	76
3545.190		V II	5
3545.339		V I	53
3545.58		A II	70
3545.603		Ce II	44
3545.639		Fe I	321
3545.797		Gd II	2
3545.832		Fe I	536
3545.84		A II	106
3546.15	P	Cr II	134
3546.190		Ce II	131
3546.21		Fe I	183
3546.22		Ne II	27
3546.707		Co I	41
3547.029		Ti I	133
3547.07		V II	69
3547.10		Cr II	134
3547.203		Fe I	321,613
3547.69		Zr I	13
3547.802		Mn I	18
3547.98		Cr I	
3548.029		Mn I	18
3548.037		Fe I	496
3548.185		Ni I	3,20
3548.202		Mn I	18
3548.438		Co I	41
3548.51		A II	56
3548.55	P	Fe II	132
3548.731		Cr I	76
3549.02		Y II	9
3549.030		V II	103
3549.08		W II	13
3549.27	P	Ti II	117
3549.365		Gd II	7
3549.51		Zr II	84
3549.61		Mg II	11
3549.72		S III	
3549.868		Fe I	48
3550.03		A II	68
3550.11	P	Zr II	124
3550.19	P	Ti II	117
3550.46		Zr I	12
3550.592		Co I	4
3550.635		Cr I	
3550.82		La II	
3551.11	P	Fe I	15
3551.16		P II	321
3551.52		Ne II	12,21
3551.534		Ni I	25
3551.666		Co I	5
3551.94		Zr II	67
3552.00		Al II	1
3552.112		Fe I	53
3552.42	P	Fe I	499
3552.50	P	Cr II	182
3552.516		Eu II	89
3552.70		Hf II	19
3552.70		Y I	7
3552.720		Co I	8
3552.828		Fe I	6
3552.85	P	Ti II	321
3552.953		Cr I	15
3552.989		Co I	
3553.10		Pd I	67
3553.161		Co I	9
3553.271		V I	137
3553.483		Ni I	53
3553.51		Mg II	16
3553.716		Gd II	11
3553.741		Fe I	89
3553.968		Cr I	810
3554.09		Zr II	157
3554.122		Fe I	83
3554.39		Ne II	23
3554.394		He I	18
3554.43		Lu II	34
3554.44	P	Fe I	7
3554.50		Fe I	395
3554.50	P	Fe II	325
3554.524		He I	176
3554.65	P	Fe I	34
3554.802		Gd II	154
3554.922		Fe I	52
3554.993		Ce II	326
3555.08	P	Fe II	117
3555.142		V I	113
3555.18		W II	53
3555.93		Co II	11
3556.083		Y II	1
3556.120		Co I	46
3556.130		Cr II	117
3556.184		Ti I	7
3556.49		P II	21
3556.54	P	Zr II	19
3556.61		Zr II	9
3556.68		Fe I	325
3556.800		V II	5
3556.877		Fe I	327
3556.91		A II	29
3556.92		O III	24
3557.053		Gd II	22
3557.26		La II	29
3557.548		Fe II	176
3557.796		Tm II	10
3557.84		Ne II	6
3557.85	P	Cr II	76
3558.08	P	Fe I	572
3558.189		Gd II	69
3558.21	P	Fe I	239
3558.22	P	Cr II	89
3558.468		Gd II	51
3558.518		Fe I	24
3558.538		Sc II	3
3558.60		Cr I	
3558.772		Co I	20
3559.101		Sm II	
3559.21		Cr I	
3559.328		Ce II	243
3559.45	P	Fe I	321
3559.506		Fe I	498
3559.53		A II	70
3559.597		Co I	97
3559.781		Cr I	89
3559.93		P II	21
3559.930		Ni I	118
3560.07	P	Fe I	321
3560.306		Co I	64
3560.42		O IV	12
3560.594		V II	4
3560.68		Cl III	10
3560.705		Fe I	675
3560.798		Ce II	51
3560.855		Os I	6
3560.891		Co I	21

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
[illegible]4		A II	106	3570.77		A II	69	3581.91		Gd II	69
[illegible]1		Zr II	82	3571.037		V I	122	3581.916		Fe I	497
[illegible]3		Ne II	31	3571.16		Pd I	1	3582.08		Zr II	101
[illegible].575		Ti II	15	3571.228		Fe I	46	3582.201		Fe I	612
3561.65		Hf II	1	3571.26		Ne II	31	3582.34	P	Fe I	568
3561.751		Ni I	2	3571.37		Cr II	107	3582.35		A II	56
3561.910		Ti II	42	3571.64	P	Cr II	89	3582.56		Fe I	181
3562.091		Ce II	36	3571.653		V I	122	3582.69		Fe I	328
3562.097		Co I	115	3571.869		Ni I	5	3583.098		Rh I	3
3562.19		A II	106	3571.933		Gd II	4	3583.337		Fe I	574
3562.29		Cr I	308	3571.97	P	Cr I	157	3583.394		Sm II	20
3562.48		Cr I	281	3571.995		Fe I	321	3583.54	P	Fe II	101
3562.48		P II	22	3572.32	P	Fe I	182	3583.676		Mn I	25
3562.60	P	Fe I	237	3572.46		Fe III	105	3583.704		V I	45
3562.912		Co I	64	3572.47		Zr II	1	3584.01	P	Cr II	107
3562.950		He I	33	3572.48		W II	3	3584.259		Sm II	12
3563.36		O IV	12	3572.523		Sc II	3	3584.366		Cr I	
3563.61	P	Fe I	325	3572.60		Fe I	325	3584.53		Y II	9
3563.71		V II	4	3572.734		Pb I	3	3584.663		Fe I	294
3563.92		Cr II	134	3572.748		Cr I	75	3584.790		Fe I	322
3564.046		Gd II	52	3573.09		Zr II	9	3584.801		Co I	6
3564.11		Fe I	48	3573.27	P	Ni I	123	3584.960		Fe I	395,611
3564.115		Co I	159	3573.403		Fe I	673	3584.962		Gd II	7
3564.30		Cr I	281	3573.516		V I	122	3584.98		C II	23
3564.34		A II	43	3573.557		V II	78	3585.154		Co I	21
3564.51	P	Fe I	183	3573.643		Cr I	75	3585.193		Fe I	438
3564.54	P	Fe II	113	3573.737		Ti II	15	3585.31		Cr II	13
3564.56	P	Fe I	183	3573.842		Fe I	181	3585.320		Fe I	23
3564.67	P	Ni I	73	3573.896		Fe I	611	3585.54		Cr II	13
3564.947		Co I	19	3574.039		Cr I	74,308	3585.708		Fe I	23
3564.953		Cr I	308	3574.23		Ne II	9	3585.808		Co I	100
3565.02		A II	57	3574.245		Ti I	247	3585.83		C II	23
3565.15		Cr I	50	3574.340		V II	78	3585.852		Ti I	
3565.31		Cr II	107	3574.37	P	Fe I	181	3585.91		Mo II	1
3565.326		Ti II	76	3574.38		Cr I		3586.082		Co I	87
3565.381		Fe I	24	3574.64		Ne II	9	3586.10	P	Fe I	497
3565.41		Zr II	102	3574.805		Cr I	75	3586.114		Fe I	611
3565.55		Cr I	50,281	3574.935		Cr I	74	3586.12		Fe III	36
3565.583		Fe I	321,328	3574.967		Co I	21	3586.23		Cr I	157
3565.83	P	Fe I	571	3575.11		Fe I	321	3586.28		Zr I	12
3565.84		Ne II	34	3575.249		Fe I	322	3586.543		Mn I	8
3566.00		Ti II	42	3575.361		Co I	4	3586.557		Al II	7
3566.052		Fe II	155	3575.374		Fe I	496	3586.708	Forb	Al II	7
3566.10		Cr I	284	3575.69	P	Cr II	107	3586.75	P	Fe I	325
3566.10		Zr I	15	3575.79		Zr I	12	3586.811	Forb	Al II	7
3566.148		Fe II	132	3575.850		Cb I	4	3586.83	P	Sc II	40
3566.177		V I	45	3575.952		Ni I	120	3586.912		Al II	7
3566.177		V II	4	3575.976		Fe I	321,328	3586.936		Al II	7
3566.31	P	Fe I	127	3576.00		Cl II	78	3586.985		Fe I	23
3566.37		Cr II	76	3576.23	P	Cr II	171	3587.068		Al II	7
3566.372		Ni I	36	3576.340		Sc II	3	3587.130		Ti II	15
3566.43		P II	22	3576.38		Ti II	76	3587.16	P Forb	He I	32
3566.472		Tm II	6	3576.44		Ti IV		3587.165		Al II	7
3566.59		Fe I	181	3576.62		A II	56	3587.186		Co I	35
3566.836		Sm II		3576.760		Fe I	613a	3587.186		Gd II	1
3567.045		Fe I	325	3576.762		Ni II	4	3587.195	Forb	Al II	7
3567.116		Gd II	89	3576.772		Gd II	51	3587.252		He I	31
3567.171		S II	56	3576.88		Zr II	9	3587.253		Fe I	325
3567.36		Fe I	183	3577.220		V II	78	3587.309		Al II	7
3567.654		Gd II	51	3577.240		Ni I	3	3587.342		Al II	7
3567.701		Sc II	3	3577.260		Co I	41	3587.396		He I	31
3567.84		Lu I	3	3577.458		Ce II	51	3587.424		Fe I	134
3568.04		Cl II	78	3577.644		V II	69	3587.450		Al II	7
3568.14		Zr II	46	3577.857		V II	78	3587.504		Nd II	
3568.271		Sm II	47	3577.880		Mn I	8	3587.53		Fe III	36
3568.36		Cr I	284	3578.03		Co II	1	3587.68		C II	23
3568.423		Fe I	321	3578.076		Co I	117	3587.69	P	Fe I	322
3568.426		Co I	61	3578.22		Zr II	83	3587.75		Y I	
3568.53		Ne II	9	3578.380		Fe I	321	3587.752		Fe I	
3568.828		Fe I	673	3578.596		Gd II	21	3587.78		Cl II	78
3568.940		V I	122	3578.636		V II	78	3587.931		Ni I	16
3568.97	P	Fe II	113	3578.67	P	Fe I	127	3587.95	P	Fe II	10
3568.977		Fe I	294	3578.687		Cr I	4	3587.98		Zr II	10
3569.03		Hf II	7	3578.687		Ti II	117	3588.13		V II	78
3569.083		V I	53	3578.89		La II	155	3588.23	P	Fe I	47
3569.14		Cr I	281	3578.903		Co I	41	3588.30		Cr II	107
3569.370		Co I	35	3579.029		Co I	41	3588.32		Zr II	10
3569.493		Mn I	18	3579.549		Gd II	89	3588.44		A II	56
3569.566		Gd II	51	3579.83	P	Fe I	573	3588.52	P	Fe I	394
3569.804		Mn I	18	3580.10		La II	155	3588.615		Fe I	325
3569.94		A II	57	3580.277		Cb I	4	3588.80		Zr II	57
3569.99		Fe I	135	3580.618		Gd II	89	3588.918		Fe I	322
3570.041		Mn I	18	3580.71	P	Sc II	40	3588.92		C II	23
3570.10		La II	142	3580.927		Sc II	3	3589.107		Fe I	23
3570.100		Fe I	24	3580.941		Sm II		3589.215		Ru I	4
3570.243		Fe I	326	3581.195		Fe I	23	3589.456		Fe I	295
3570.34		P II	18	3581.62		A II	56	3589.635		Sc II	3
3570.57	P	Cr II	89	3581.645		Fe I	295	3589.67		C II	23
3570.60	P	Fe I	154	3581.68		La II	136	3589.745		V II	4
3570.662		W I	3,5	3581.80		C II	23	3589.77		Fe III	

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3589.973		Mn I	25	3601.666		Cr I	74	3609.687		Ce II	179
3590.08		Fe I	440	3601.692		Sm II	20	3609.752		Co I	147
3590.29	P	Fe I	497	3601.782		Mn I	25	3609.788		Nd II	
3590.46		Si III	7	3601.916		Al III	1	3610.052		Cr I	49
3590.468		Gd II	22	3601.93		Y II	9	3610.07		Cl II	
3590.47		Ne II	32	3602.079		Co I	4	3610.154		Ti I	58
3590.475		Sc II	3	3602.10		Cl III	1	3610.159		Fe I	321
3590.598		Ce II	232	3602.10		Fe I	322	3610.25		La II	
3590.66		Fe I	953	3602.281		Ni I	3	3610.299		Mn I	8
3590.87		C II	23	3602.46		Fe I	322	3610.33	P	Fe II	112
3590.99		Fe I	573	3602.534		Fe I	324,391	3610.38	P	Fe II	175
3591.345		Fe I	321	3602.574		Cr I	74	3610.462		Ni I	18
3591.485		Fe I	568	3602.60	P	Fe II	101	3610.703		Fe I	323
3591.746		Co I	134	3602.61	P	Cr I	140	3610.76		Gd II	89
3591.912		Gd II	51	3602.70	P	Fe I	390	3610.794		Th II	3
3592.012		V II	4	3602.77	P	Fe I	370	3610.85	P	Cr II	171
3592.486		Fe I	237	3603.20		Eu II	16	3611.06		Y II	9
3592.595		Nd II		3603.205		Fe I	295	3611.418		Ni I	119
3592.603		Sm II	39	3603.46		A II	57	3611.54	P	Ni I	2
3592.68		Fe I	569	3603.572		Fe I	181	3611.57		Eu II	15
3592.709		Gd II	69,89	3603.61		Cr II	13	3611.58		V II	
3592.881		Fe I	77	3603.72		Cl II	78	3611.701		Co I	115
3592.92		Y I	8	3603.745		Cr I	74	3611.72		Fe III	36
3593.02	P	Cr II	13	3603.80		Cr II	13	3611.84		A II	30
3593.022		Ru I	4	3603.828		Fe I	496	3611.90		Zr II	113
3593.093		Ti II	76	3603.845		Ti I	20	3612.068		Fe I	325
3593.15		Fe III	36	3603.86		Cr II	13	3612.34		La II	125
3593.323		V II	4	3603.88		Fe III	36	3612.34		Zr II	146
3593.33		Fe I	571	3603.91		A II	43,68	3612.35		Ne II	26
3593.445		Gd II	52	3604.21	P	Fe II	175	3612.352		Al III	1
3593.488		Cr I	4	3604.284		Ti I	21	3612.470		Rh I	1
3593.5259		Ne I	7	3604.285		Sm II	47	3612.51	P	Fe I	613a
3593.60		N II	26	3604.375		V II	130	3612.609		Cr I	252
3593.76		A II	117	3604.383		Fe I	323	3612.741		Nf I	6
3593.80	P	Fe I	182	3604.469		Co I	136	3612.85		Cl III	1
3594.10	P	Fe I	154	3604.51		Cl II	78	3612.940		Fe I	46,77
3594.13	P	Sc II	40	3604.54		Cr I	49,89	3613.03		S II	4
3594.18		Ne II	34	3604.95	P	Cr I	74	3613.08	P	Fe I	322
3594.41		A II	23	3604.96	P	Fe I	77	3613.08		Zr II	1
3594.462		S II	16	3605.018		Co I	97	3613.15		Fe I	324
3594.632		Fe I	322	3605.05	P	Cr I	49	3613.21		Cr II	13
3594.87	P	Co I	135	3605.333		Cr I	4	3613.26		Cr II	13
3594.870		Co I	4	3605.370		Co I	20	3613.30	P	Ti II	76
3594.89	P	Sc II	40	3605.41	P	Cr I	49	3613.392		Gd II	69
3595.119		Mn I	8	3605.450		Fe I	294	3613.43		Zr II	8,45
3595.294		Fe I	322	3605.46		Y II	46	3613.45	P	Fe I	672
3595.66		Fe I	322	3605.50	P	Fe I	322	3613.490		Gd II	87
3595.87		Fe I	181	3605.50	P	Sc II	40	3613.641		He I	6
3595.991		S II	4	3605.52	P	Cr I	252	3613.669		Cr I	89
3596.048		Ti II	15	3605.665		Gd II	4	3613.70		Zr I	33
3596.179		Ru I	4	3605.691		Mn I	25	3613.701		Ce II	110
3596.194		Rh I	1	3605.89		A II	30	3613.80		Mg II	2
3596.20		Fe I	181	3606.062		Ti I	303	3613.836		Sc II	2
3596.351		Mo II	1	3606.18	P	Fe II	175	3613.95	P	Fe I	612
3596.510		Co I	118	3606.38	P	Fe I	233	3614.10		Co I	64
3596.55		Ti II	76	3606.5224		A I	5	3614.21		Gd II	51
3597.05		Fe I	569	3606.53	P	Fe I	133	3614.26		Cr II	132
3597.147		Rh I	5	3606.679		Fe I	294	3614.34		Co I	134
3597.24	P	Fe I	856	3606.786		Ti I	20	3614.550		Fe I	
3597.39	P	Sc II	40	3606.852		Ni I	120,173	3614.673		Nd II	38
3597.42		Hf II	54	3607.04		Co I	67	3614.77	P	Fe I	395
3597.50		Al II	52	3607.05	P	Fe II	101	3614.79		Zr II	9
3597.705		Ni I	18	3607.25	P	Cr I	140	3614.873		Fe II	112
3598.196		Ce II	116	3607.30		V II	77	3615.01	P	Fe I	154
3598.22		Fe III	105	3607.39		Zr II	83	3615.09		Cl II	70
3598.71		Fe I	674	3607.537		Mn I	8	3615.19		Fe I	569
3598.714		Ti I	59	3607.625		Ce II	178	3615.387		Co I	66
3598.93		Fe I	568	3607.92	P	Cr I	140	3615.45	P	Cr II	147
3598.98		Fe I	322	3608.146		Fe I	325,438	3615.64		Mg II	2
3599.304		He I	30	3608.307		Co I	20	3615.645		Cr I	3
3599.395		Cr I	89	3608.32		V II	242	3615.66		Fe I	46
3599.442		He I	30	3608.401		Cr I	252	3615.817		Nd II	69
3599.49		Fe III	36	3608.49	P	Fe II	175	3615.88		N II	26
3599.530		Ni I	121	3608.494		Mn I	8	3616.15	P	Fe I	569
3599.624		Fe I	809	3608.58	P	Cr I	140	3616.152		Eu II	28
3599.91		Zr II	123	3608.66		Cr II	133	3616.29	P	Cr II	147
3599.974		Ce II	219	3608.7	P	Ni II	4	3616.326		Fe I	132
3600.22		A II	115	3608.753		Gd II	69	3616.572		Fe I	
3600.48	P	Fe I	498	3608.766		Tm II	3	3616.916		S II	56
3600.583		Ce II	236	3608.861		Fe I	23	3617.09		Fe I	535
3600.74		Y II	9	3608.89	P	Ti II	76	3617.164		Gd II	89
3600.803		Co I	63	3608.96		C III	10	3617.317		Fe I	
3600.93		Fe III	36	3609.04		Cr I	49	3617.32		Cr II	147
3600.963		Gd II	69	3609.09		N II	26	3617.522		W I	8
3601.07		La II	44	3609.314		Ni I	16	3617.53	P	Fe I	323
3601.16		Ti I	172	3609.46	P	Fe I	322	3617.788		Fe I	496
3601.18		Zr I	13	3609.479		Cr I	49	3617.97	P	Fe I	181
3601.42	P	Fe I	127	3609.491		Sm II	30	3618.010		Co I	36
3601.51		A II	4	3609.56		Pd I	2	3618.30	P	Fe I	324
3601.623		Al III	1	3609.61		C III	10	3618.392		Fe I	295,571

I A	Type	Element	Multiplet No.
3618.49		K II	1
3618.62	P	Fe I	569
3618.769		Fe I	23
3618.88		Cl II	77
3618.91	P	Fe I	130
3618.924		V II	158
3618.96	P	Fe I	77
3619.284		Mn I	8
3619.392		Ni I	35
3619.460		Cr I	48
3619.514		Cb II	4
3619.66	P	Fe I	130
3619.76		Fe I	180
3620.00	P	Fe I	324
3620.23		Fe I	324
3620.27		Fe III	25
3620.422		Co I	116
3620.496		V II	181
3620.82		A II	67
3620.87	P	Fe I	611
3620.88	P	Fe I	323
3620.95		Y I	8
3621.06		A II	4
3621.19	P	Fe I	574
3621.203		V II	76
3621.22		Co II	1
3621.229		Sm II	12
3621.273		Fe II	144
3621.463		Fe I	294
3621.51		Cr II	98
3621.718		Fe I	808
3622	P	O VI	3
3622.00	P	Fe I	233
3622.001		Fe I	295
3622.145		Ce II	71
3622.15		A II	42
3622.289		V II	144
3622.45		Cr II	171
3622.504		Sm II	6
3622.54		Eu II	18
3622.69		Cl III	1
3622.81	P	Fe II	175
3622.850		Mo II	1
3623.03		V II	77
3623.187		Fe I	180
3623.316		Sm II	12
3623.440		Fe I	233,438
3623.51	P	Fe I	393
3623.772		Fe I	323
3623.792		Mn I	8
3623.837		Ce II	235
3623.837		Ce II	
3623.87		Zr I	12
3623.98		Lu II	6
3624.00		Hf II	18
3624.06	P	Fe I	570
3624.111		Ca I	9
3624.25		Fe III	93
3624.30		Fe I	133
3624.337		Co I	41
3624.688		Fe II	
3624.72	P	Ni I	121
3624.733		Ni I	2
3624.826		Ti II	52
3624.890		Fe II	144
3624.955		Co I	21
3625.140		Fe I	323
3625.26		Gd II	69
3625.30	P	Cr II	98
3625.608		V II	76
3625.92	P	Cr II	147
3626.020		Co I	41
3626.085		Ti I	20
3626.32		Gd II	69
3626.53		S III	
3627.014		Sm II	30
3627.05		Fe I	808
3627.168		Fe II	193
3627.35	P	Fe I	395
3627.63		Mg I	45
3627.71		Ti II	62
3627.713		V II	76
3627.806		Co I	19
3627.971		Sm II	12
3628.06		Ne II	41
3628.094		Fe I	77
3628.247		Ce II	113
3628.71		Y II	9
3628.82	P	Fe I	438
3628.83		La II	13
3629.10	P	Sc II	18
3629.12		Zr II	113
3629.51		Gd II	69
3629.741		Mn I	8
3629.906		Ni I	182
3629.99	P	Fe II	111
3630.03		Zr II	10
3630.26	P	Ni I	180
3630.353		Fe I	323
3630.67	P	Fe I	126
3630.740		Sc II	2
3630.748		Ca I	9
3630.974		Ca I	9
3631.103		Fe I	322
3631.126		Sm II	
3631.194		Ce II	88
3631.266		Na II	2
3631.390		Co I	4
3631.41		P II	22
3631.464		Fe I	23
3631.48	P	Cr II	170
3631.482		V II	76
3631.49		Cr II	12
3631.72		Cr II	12
3631.948		Co I	133
3631.959		W I	3
3631.999		Ti I	
3632.022		S III	1
3632.042		Fe I	496
3632.106		Ce II	114
3632.126		V II	76
3632.292		Fe II	112
3632.46		Cr I	49
3632.558		Fe I	437
3632.75		Ne II	33
3632.839		Co I	147
3632.839		Cr I	49
3632.979		Fe I	135
3633.07	P	Fe I	390
3633.13		Y II	2
3633.16	P	Cr II	147
3633.340		Co I	116
3633.458		Ti I	
3633.49		Zr II	102
3633.64	P	Fe I	395
3633.837		Fe I	440
3633.99	P	Ti II	116
3634.04		Cr II	147
3634.10	P Forb	He I	29
3634.13		V II	180
3634.235		He I	28
3634.290		Sm II	19
3634.326		Fe I	389
3634.373		He I	28
3634.52	P	Fe I	323
3634.698		Fe I	
3634.71		Pd I	1
3634.713		Co I	146
3634.757		Gd II	69
3634.83		A II	29
3634.928		Sm II	6
3634.941		Ni I	33
3635.08	P	Fe I	919
3635.13		A II	4
3635.144		Mo II	5
3635.19		Fe I	490
3635.202		Ti I	20
3635.28	P	Fe I	324
3635.281		Cr I	3
3635.334		Y II	46
3635.36	P	Ti II	62
3635.43	P	Cr II	98
3635.462		Ti I	19
3635.64	P	Ti II	116
3635.67		A II	68
3635.82	P	Fe I	321
3636.186		Fe I	77,568
3636.21		Cr I	47
3636.23		Fe I	774
3636.46		Zr II	9
3636.49	P	Fe I	568
3636.50	P	Fe I	47
3636.590		Cr I	47
3636.61	P	Fe II	111
3636.650		Fe I	493
3636.713		Co I	64
3636.90	P	Fe II	112
3636.995		Fe I	233
3637.05		A II	
3637.05	P	Fe I	438
3637.15		La II	55
3637.251		Fe I	180
3637.319		Co I	117
3637.73		Fe I	229
3637.83		Sb I	1
3637.862		Fe I	385
3637.89		A II	
3637.966		Ti I	18
3638.15		S III	
3638.16	P	Fe I	324
3638.296		Fe I	294
3638.49	P	Ti I	118
3638.70		O III	35
3638.767		Sm II	
3638.80		Pt I	6
3639.024		V I	83
3639.14	P	Mn I	7
3639.19		Cl II	77
3639.443		Co I	64
3639.568		Pb I	1
3639.76	P	Sc II	18
3639.802		Cr I	47
3639.85		A II	116
3640.18		Gd II	23
3640.388		Fe I	295
3640.39		Cr I	47
3640.891		F II	11
3641.01		Cr I	47
3641.096		V I	115
3641.22	P	Fe II	111
3641.330		Ti II	52
3641.39		Gd II	86
3641.42		W II	1
3641.45	P	Fe I	323
3641.470		Cr I	47
3641.641		Ni I	6
3641.66		La II	136
3641.784		Co I	99
3641.830		Cr I	47
3641.985		F II	11
3642.387		Ni I	75
3642.675		Ti I	19
3642.785		Sc II	2
3642.798		F II	11
3643.181		Co I	99
3643.22		Cr II	1
3643.4		Y II	55
3643.47		Mo II	1
3643.627		Fe I	385
3643.716		Fe I	233
3643.80	P	Fe I	670
3643.82	P	Fe I	46
3643.864		V I	83
3643.89		Ne II	5
3643.941		Ni I	174
3644.12	P	Cr II	98
3644.19	P	Fe II	131
3644.35		Hf II	6
3644.410		Ca I	9
3644.47		He II	5
3644.58	P	Fe I	235
3644.699		Ti I	
3644.70		Cr II	1
3644.765		Ca I	9
3644.798		Fe I	570
3644.86		Ne II	41
3644.87	P	Ti II	116
3644.990		Ca I	9
3645.090		Fe I	323,495
3645.190		Co I	61
3645.20		O III	35
3645.290		Sm II	19
3645.311		Sc II	2
3645.387		Sm II	35
3645.43		La II	14
3645.440		Co I	97
3645.494		Fe I	323,391,441
3645.59		Cr I	48
3645.596		V I	137
3645.62		Gd II	17
3645.78	P	Fe II	112
3645.822		Fe I	496
3645.905		V II	76
3645.981		H	7
3646.10	P	Fe I	324
3646.161		Cr I	48
3646.19		Gd II	2
3646.198		Ti I	18
3646.75		Eu II	13
3646.84		O III	35

I A	Type	Element	Multiplet No.
3646.848		V II	180
3646.965		Ce II	66
3647.081		Co I	118
3647.40		Cr II	1
3647.427		Fe I	46
3647.43	P	Fe I	497
3647.56	P	Fe I	574
3647.658		Co I	4
3647.71		Ni I	
3647.77		Lu I	
3647.84	P	Fe I	569
3647.844		Fe I	23
3648.07		Cl II	77
3648.22	P	Fe I	978
3648.35		Hf II	39
3648.534		Cr I	47
3648.80	P	Ti II	74
3648.86		Ti II	83
3648.966		V I	115
3648.997		Cr I	47
3649.01	P	Ti II	14
3649.184	Forb	Al II	12
3649.20		O III	35
3649.232	Forb	Al II	12
3649.304		Fe I	5
3649.329		Co I	146
3649.44		Gd II	69
3649.508		Fe I	291
3649.527		Sm II	47
3649.70	P	Fe I	391
3650.031		Fe I	394
3650.13		Cl II	7
3650.144		Hg I	3
3650.188		Sm II	25
3650.19		La II	12
3650.19		N I	
3650.280		Fe I	180
3650.37		Cr II	156
3650.45		Y II	75
3650.70		O III	35
3650.73		Zr II	146
3650.90		A II	43
3650.95		Gd II	69
3650.998		Sm II	51
3651.03	P	Fe I	571
3651.065	Forb	Al II	12
3651.096		Al II	12
3651.10		Fe I	322,674
3651.182		Cb II	4
3651.254		Co I	85
3651.469		Fe I	295
3651.50		Zr II	122
3651.67	P	Ni I	153
3651.68		Cr II	1
3651.798		Sc II	2
3651.90	P	Ti I	118
3651.971		He I	27
3652.119		He I	27
3652.26	P	Fe I	494
3652.541		Co I	4
3652.65		Fe III	
3652.748		Fe II	
3652.81	P	Ti II	116
3653.00		O III	35
3653.108		Ce II	38
3653.35	P	Fe I	229,324
3653.497		Ti I	19
3653.614		Tm II	10
3653.62	P	Sc II	18
3653.670		Ce II	50
3653.763		Fe I	180
3653.85	P	Cr II	156
3653.912		Cr I	47
3654.441		Co I	63
3654.51		S II	4
3654.592		Ti I	18
3654.62		Gd II	4
3654.66		Fe I	77
3654.995		Al II	12
3655.29		A II	82
3655.35	P	Fe I	131
3655.465		Fe I	369
3655.56		Zr II	71
3655.851		Ce II	51
3655.92	P	Cr I	46
3656.05		A II	67
3656.135		H	7
3656.152		Gd II	1
3656.221		Sm II	
3656.227		Fe I	
3656.261		Cr I	46
3656.319		Al II	51
3656.35	P	Fe I	323
3656.50	P	Fe II	111
3656.61		S III	6
3656.666		H	7
3656.706		V I	115
3656.73	P	Ti I	118
3656.77	P	Fe II	131
3656.95		Cl III	1
3656.962		Co I	21
3657.143		Fe I	130
3657.269		H	7
3657.574		Ru II	1
3657.59		W II	2
3657.698		Ni I	183
3657.89		Fe I	395
3657.926		H	7
3657.94		Cr II	170
3657.987		Rh I	1
3658.02	P	Fe I	438
3658.097		Ti I	19
3658.19		Cr II	98,146
3658.266		V II	116
3658.3		Al III	20
3658.38		Cl II	7
3658.55		Fe I	231
3658.641		H	7
3659.02		Hf II	44
3659.227		Ce II	54
3659.423		H	6
3659.516		Fe I	180
3659.602		Cb II	
3659.765		Ti II	75
3659.84		Cl II	7
3659.93		Ne II	33
3660.279		H	6
3660.33		Fe I	323
3660.404		Mn I	
3660.41	P	Fe I	229
3660.44		A II	116
3660.631		Ti I	18
3660.641		Ce II	42
3660.85		Fe III	93
3660.92		Zr II	32
3661.05		Hf II	26
3661.17	P	Fe II	111
3661.20		Zr I	12
3661.221		H	6
3661.25	P	Fe I	952
3661.33		Zr II	102
3661.353		Ru I	2
3661.36		Fe I	179
3661.365		Sm II	6
3661.383		V II	191
3661.44		Cr II	156
3661.73		Hf II	62
3661.951		Ni I	16
3662.005		S III	6
3662.08		La II	12
3662.14		Zr II	101
3662.158		Co I	115
3662.237		Ti II	75
3662.258		H	6
3662.26		Gd II	4
3662.39		Cr I	46
3662.62	P	Cr II	1
3662.693		Sm II	
3662.73	P	Fe I	490
3662.840		Cr I	46
3662.90	P	Fe I	436
3662.905		Sm II	39
3663.206		Cr I	46
3663.25		Fe I	439
3663.274		Hg I	2
3663.406		H	6
3663.458		Fe I	229,231
3663.47		S II	16
3663.594		V I	114
3663.64		Zr I	12
3663.95		Fe I	435
3663.98		Fe III	24
3664.09		Ne II	1
3664.095		Ni I	4
3664.20		P II	18
3664.254		Sc II	10
3664.537		Fe I	391
3664.60		Gd II	
3664.62		Y II	9
3664.679		H	6
3664.69		Fe I	390
3664.86	P	Ti II	116
3664.95		Cr II	156
3664.98		Fe III	24
3665.142		V I	115
3665.180		Nd II	
3665.22		La II	
3665.35		Hf II	18
3665.43		Cr I	48
3665.48	P	Cr II	1
3665.812		Tm II	10
3665.924		Ni I	
3665.980		Cr I	48
3666.02	P	Cr II	145
3666.097		H	5
3666.11	P	Ti II	74
3666.19		Cr I	46
3666.215		Rh I	3
3666.24		Fe I	179,389
3666.29	P	Fe I	672
3666.537		Sc II	2
3666.592		Ti II	116
3666.642		Cr I	46
3666.85	P	Fe I	393
3666.944		Fe I	46
3667.06		Zr II	8
3667.252		Fe I	570
3667.40		Zr II	32
3667.684		H	5
3667.741		V I	114
3667.932		Sm II	30
3667.981		Ce II	40
3667.999		Fe I	438,569
3668.029		Cr I	46
3668.03		Cl II	7
3668.088		Tm II	2
3668.214		Fe I	568
3668.216		Ni I	182
3668.46		Zr II	9
3668.489		Y II	46
3668.58	P	Fe I	231
3668.719		Ce II	38
3668.830		Pr II	
3668.893		Fe I	229
3668.965		Ti I	18
3669.049		S II	16
3669.151		Fe I	437
3669.241		Ni I	2
3669.399		Mn I	7
3669.410		V II	116
3669.466		H	5
3669.523		Fe I	291
3669.62		A II	42
3669.68	P	Fe I	436
3669.69	P	Cr II	1
3669.838		Mn I	7
3670.035		Fe I	369
3670.041		Co I	64
3670.071		Fe I	435
3670.16	P	Cr II	6
3670.23	P	Fe I	47
3670.28		Cl III	1
3670.427		Ni I	4
3670.517		Mn I	7
3670.668		Mo II	1
3670.677		Sm II	
3670.810		Fe I	133
3670.840		Sm II	11
3671.01		A II	115
3671.12	P	Cr II	6
3671.20		Gd II	2
3671.205		V I	70
3671.28		Zr II	45
3671.478		H	5
3671.51		Fe I	570
3671.672		Ti I	19
3671.94		Cr I	217
3672.14		S II	4
3672.166		Ce II	49
3672.363		Nd II	
3672.403		V I	115
3672.65		Zr II	1
3672.69		Fe I	180
3672.789		Ce II	233
3673.19		Eu II	28
3673.26		A II	117
3673.35	P	Fe II	174
3673.404		V I	114
3673.448		Ca I	28
3673.542		Nd II	

I A	Type	Element	Multiplet No.
3673.59		Cr I	217
3673.68	P	Fe I	978
3673.761		H	5
3673.77	P	Fe II	131
3673.83		Cl II	7
3674.06	P	Ni I	15
3674.15	P	Ni I	32
3674.634		Eu II	11
3674.691		V II	93
3674.74		Zr II	9
3674.766		Fe I	369
3674.92	P	Ti I	177
3675.00	P	Cr II	1
3675.265		Sc II	10
3675.307		Ca I	28
3675.44	P	Fe I	229
3675.497		V I	114
3675.64		Y II	84
3675.700		V I	29
3675.76	P	Fe I	996
3676.27		P II	19
3676.314		Fe I	228
3676.33		Cr I	89
3676.365		H	4
3676.50	P	Cr II	1
3676.552		Co I	145
3676.684		V I	115
3676.879		Fe I	389
3676.959		Mn I	
3677.309		Fe I	773
3677.477		Fe I	125
3677.630		Fe I	291
3677.69		Cr II	12
3677.793		Sm II	
3677.835		Co I	116
3677.86		Cr II	12
3677.93		Cr II	12
3677.980		Co I	20
3678.13		S II	
3678.240		Ca I	28
3678.259		Eu II	29
3678.27		A II	42
3678.342		Sc II	45
3678.46	P	Mn I	7
3678.862		Tm II	12
3678.863		Fe I	131
3678.91		Zr II	101
3678.98		Fe I	124
3679.070		Cr I	45
3679.14	P	Ti I	177
3679.33		Fe I	228
3679.34	P	Cr II	118
3679.355		H	4
3679.424		Ce II	257
3679.500		Eu II	
3679.53		Fe I	393,490
3679.64		Zr II	122
3679.673		Ti II	75
3679.80		Ne II	41
3679.819		Cr I	48
3679.915		Fe I	5
3680.06		A II	115
3680.113		V I	114
3680.19		Cr I	48
3680.675		Fe I	568
3680.801		Fe I	
3680.98	P	Fe II	111
3681.272		Ti I	177
3681.54		K II	1
3681.64		Fe I	390
3681.691		Cr I	89
3681.774		Fe I	
3681.87		Fe I	951
3682.05		Cl III	1
3682.101		W I	4
3682.15	P	Fe I	386
3682.17	P	Fe I	385
3682.226		Fe I	772
3682.25		Hf I	1
3682.56		A II	29
3682.66	P	Fe II	131
3682.67		Zr II	44
3682.810		H	4
3683.047		Co I	99
3683.054		Fe I	5
3683.126		V I	29
3683.267		Eu II	11
3683.39		Cl III	12
3683.469		Pb I	1
3683.616		Fe I	130,671
3683.67		Cr I	216
3683.71		Ca II	18
3683.77	P	Fe I	996
3684.1		Li II	2
3684.108		Fe I	292
3684.25		Cr II	145
3684.332		V I	114
3684.479		Co I	99
3684.903		Y II	62
3684.960		Co I	116
3685.049		Mn II	8
3685.192		Ti II	14
3685.212		Mn I	7
3685.47	P	Ti I	177
3685.548		Cr I	44
3685.66	P	Fe I	231
3685.804		Nd II	
3685.964		Ti I	117
3685.998		Fe I	385
3686.18		Cr I	44
3686.20		Mn II	8
3686.260		Fe I	131
3686.262		V I	70
3686.477		Co I	134
3686.555		Cu II	2
3686.67		Cr II	118
3686.71		Ti I	222
3686.803		Cr I	44
3686.833		H	4
3687.039		Pr II	
3687.100		Fe I	75
3687.252		Cr I	44
3687.354		Ti I	19
3687.458		Fe I	21
3687.473		V I	114
3687.545		Cr I	45
3687.656		Fe I	291
3687.74		Gd II	20
3687.78		Eu II	
3687.802		Ce II	143
3688.01	P	Cr II	1
3688.069		V I	29
3688.11		Cr I	45
3688.27	P	Ti I	177
3688.307		Mo II	5
3688.415		Ni I	5
3688.418		Sm II	11
3688.42		Eu II	2
3688.44		Cl II	56
3688.457		Cr I	48
3688.476		Fe I	669
3688.71		Fe III	93
3688.877		Fe I	179
3689	P	N IV	12
3689.02	P	Fe I	178
3689.2		Y II	75
3689.302		Cr I	48
3689.305		Ni I	173
3689.37	P	Fe I	391
3689.457		Fe I	369,386
3689.63		Cr I	216
3689.671		Ti I	222
3689.897		Fe I	533
3689.916		Ti I	18
3690.032		Ru II	1
3690.095		Fe I	231
3690.281		V I	29
3690.35		Pd I	7
3690.450		Fe I	497,570
3690.60		Fe III	85
3690.70		V II	190
3690.715		Co I	86
3690.730		Fe I	807
3690.98	P	Zr II	82
3691.18	P	Fe I	229
3691.53	P	Fe I	707
3691.557		H	4
3692	P	O V	8
3692.17		A II	68
3692.221		Sm II	29
3692.225		V I	29
3692.33		A II	4
3692.357		Rh I	1
3692.44		O I	6
3692.60		Zr II	56
3692.645		Mo II	5
3692.812		Mn I	7
3693.008		Fe I	439
3693.09		Cr I	216
3693.106		Co I	97
3693.364		Co I	64
3693.476		Co I	95
3693.56		Cr I	45
3693.667		Mn I	
3693.78	P	Fe I	46
3693.79	P	Fe I	490
3693.932		Ni I	15
3693.989		Sm II	2
3694.005		Fe I	394
3694.10	P	Ti I	177
3694.11		Ca II	18
3694.115		Mn I	24
3694.12		Cr I	45
3694.19		Yb II	1
3694.22		Ne II	1
3694.27		La II	124
3694.31		Ca II	18
3694.445		Ti I	117
3694.622		V I	114
3694.911		Ce II	63
3694.98		Cr II	169
3695.054		Fe I	229,534e
3695.158		V II	116,179
3695.335		V I	114
3695.37		O III	21
3695.507		Fe I	225,707
3695.86		Cr I	217
3695.865		V I	29
3696	P	N IV	12
3696.03		Fe I	128
3696.29	P	Ni I	74
3696.39		Ti II	73
3696.568		Mn I	24
3696.6		Y II	74
3696.65	P	Ni I	74
3696.78		Cr II	131
3696.81	P	Fe I	434
3696.885		Ti I	177
3696.913		Ni I	172
3697.09		Ne II	41
3697.154		H	3
3697.426		Fe I	389
3697.45		Fe III	35
3697.49		Zr II	7
3697.510		Fe I	670
3697.72		V II	204
3697.73		Gd II	4
3697.850		Cb I	3
3697.88		S III	
3698.00		Cr II	118
3698.03	P	Fe I	75
3698.17		Zr II	71
3698.183		Ti I	222
3698.39		Hf II	42
3698.611		Fe I	491
3698.650		Ce II	51
3698.70		O III	21
3699.017		Co I	145
3699.147		Fe I	490
3699.37		S III	
3699.41	P	Fe I	996
3699.476		V I	70
3699.55	P	Fe I	436
3699.72		Hf II	18
3699.73		Gd II	20
3699.90	P	Fe II	131
3699.920		Ce II	223
3699.952		Pr II	11
3700.055		Ti I	
3700.126		V II	102
3700.14		Fe III	84
3700.256		Tm II	6
3700.337		V II	116
3700.42	P	Cr II	1
3700.61	P	Fe I	569
3700.909		Rh I	2
3700.922		Sm II	
3700.96		V II	102
3701	P	O V	8
3701.086		Fe I	385
3701.15		Hf II	61
3701.364		Tm II	2
3701.63	P	Ni I	138
3701.730		Mn I	7
3701.81		La II	136
3701.81		Ne II	40
3701.90		Cr II	168
3702	P	O V	16
3702.033		Fe I	369
3702.086		Al III	4

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3702.237		Co I	145	3710.46		P II	37	3718.21		A II	131
3702.291		Ti I	83	3710.47		Zr II	122	3718.380		Ce II	37
3702.500		Fe I	46,75	3710.60		Cr I	88	3718.407		Fe I	292
3702.553		Mo II	5	3710.869		Sm II	19	3718.86		Zr II	9
3702.75		O III	14	3710.870		Eu II	14	3718.877		Sm II	38
3702.942		Ti I	132	3711.074		Na II	3	3718.92		Pd I	3
3703	P	O V	8	3711.099		Pr II	18	3718.930		Mn I	
3703.217		Al II	18	3711.118		V II	102	3719.27		Hf II	7
3703.323		Y II	62	3711.225		Fe I	228	3719.45		Gd II	
3703.37		O III	21	3711.29		Cr II		3719.53		Gd II	17
3703.43	P	Fe I	704	3711.30	P	Fe I	75	3719.74		Mo II	5
3703.52		C III	12	3711.32		Fe III	99	3719.797		Ce II	52
3703.556		Fe I	291,292	3711.411		Fe I	494	3719.935		Fe I	5
3703.584		V I	29	3711.543		Sm II	25	3720.17	P	Fe II	23
3703.697		Fe I	389	3711.646		Co I	63	3720.29	P	Zr II	32
3703.824		Fe I	369	3711.751		V II	116	3720.384		Ti I	177
3703.832		V II	15	3711.92	P	Fe I	178	3720.43		A II	42
3703.855		H	3	3711.95		Zr II	8	3720.45		Cl III	5
3704.010		Fe I	495	3711.973		H	3	3720.69	P	Rh II	7
3704.060		Co I	35	3711.974		Fe II	192	3720.86		O III	21
3704.295		Ti I	117	3712.109		Sm II		3720.93		V I	98
3704.336		Fe I	609	3712.177		Co I	84	3721.03	P	Ni I	181
3704.463		Fe I	290	3712.39	P	Fe II	15	3721.189		Fe I	491
3704.699		V I	29	3712.48		O III	21	3721.278		Fe I	75,705
3704.73		O III	21	3712.50		Cr I	269	3721.358		V I	11
3704.79	P Forb	He I	26	3712.533		V II	157	3721.396		Fe I	131
3704.80	P	Fe I	950	3712.70		Gd II	20	3721.398		Y II	75
3704.848		Tm II	9	3712.75		O II	3	3721.512		Fe I	389
3705.003		He I	25	3712.764		Sm II	25	3721.606		Fe I	437
3705.035		V I	29	3712.97		Cr II	12	3721.632		Ti II	13
3705.12	P	Ni I	30	3713.018		Cb I	3	3721.69		Zr II	44
3705.140		He I	25	3713.03		A II	114	3721.847		Sm II	
3705.26	P	Fe I	704	3713.04		Cr II	12	3721.86		Ne II	37
3705.40	P	Cr II	118	3713.09		Ne II	5	3721.940		H	3
3705.40		Hf II	62	3713.103		Al III	4	3721.95		O III	21
3705.45		Cl III	1	3713.336		Ni I	74	3721.998		V I	91
3705.53		Ti I	222	3713.45		Eu II	12	3722.028		Fe I	291
3705.567		Fe I	5	3713.54		La II	26	3722.068		Gd II	119
3705.70	P	Fe I	610	3713.56		V I	98	3722.16		V II	15
3705.71	P	Fe I	293	3713.696		Ni I	74	3722.23	P	Fe I	490
3705.81		La II	55	3713.734		Ti I	116	3722.24	P	Fe I	127
3705.83		V I	114	3713.957		V I	11	3722.484		Ni I	18
3706.026		Ca II	3	3714	P	N IV	12	3722.564		Fe I	5
3706.035		V I	104	3714.03		O III	14	3722.568		Ti I	17
3706.06		P II	20	3714.13		Zr I	12	3722.601		V I	91
3706.219		Ti II	73	3714.3		Y II	61	3722.759		Ce II	90
3706.752		Sm II	47	3714.39		Cr I	269	3722.77	P	Fe I	707
3706.91		Mn II	8	3714.74		A II	3	3722.79		Sb I	1
3706.94		A II	4	3714.77		Zr II	18	3723.324		V I	98
3706.979		Sm II		3714.808		Nd II	35	3723.38	P	Ni I	183
3707.01		Co I	85	3714.87		La II	55	3723.40		Cr II	144
3707.048		Fe I	385,392	3714.904		Eu II	11	3723.506		Nd II	
3707.13		Cr II	169	3715.08		O III	14	3723.63		P II	22
3707.167		Sm II	35	3715.19		Cr II	20	3723.631		Ti II	72
3707.24		O III	14	3715.371		Ti I		3723.92	P	Fe II	14
3707.34		Cl III	9	3715.45		Cr II	145	3724.106		Ti II	73
3707.465		Co I	96	3715.476		V II	15	3724.26	P	Ni I	183
3707.549		Ti I	177	3715.499		Ni I	183	3724.380		Fe I	124
3707.828		Fe I	5	3715.53		La II	43	3724.51		A II	131
3707.918		Fe I	76	3715.795		Ti I	116	3724.570		Ti I	131
3708.06		Mn II	8	3715.86		P II	1	3724.81		Mn II	8
3708.18	P	Fe I	228	3715.911		Fe I	124	3724.827		Ni I	182
3708.410		Sm II	5	3716.36		Gd II	2	3724.902		Sm II	5
3708.45	P	Fe I	436	3716.365		Ce II	40	3724.94		Eu II	2
3708.602		Fe I	178,225	3716.442		Fe I	388,705	3724.984		V II	102
3708.625		Ti I	268	3716.531		Cr I	269	3725.05		La II	13
3708.654		Sm II	19	3716.60		K II	2	3725.061		Tm II	
3708.721		V I	104	3716.71	P	Fe I	434	3725.155		Ti I	83
3708.823		Co I	98	3716.91		Y II	76	3725.29		Mn II	8
3709.03	P	Fe I	390	3716.930		Ce II	242	3725.30		O III	14
3709.13		Gd II	51	3717	P	O V	8	3725.304		Fe II	130
3709.246		Fe I	21	3717.02		Zr II	82	3725.498		Fe I	534
3709.25	P	Cr II	6	3717.03		P IV	3	3725.65	P	Fe I	75
3709.27		Zr II	45	3717.06		Cb II		3725.675		Ce II	231
3709.286		Ce II	40	3717.17		A II	67	3725.81		O IV	6
3709.335		V II	102	3717.19	P	Fe I	704	3725.901		Fe II	
3709.371		S III	1	3717.259		Ti I	116	3726	P	O V	8
3709.52		O III	21	3717.393		Ti I	17	3726.06	P	Fe I	433
3709.535		Fe I	435	3717.53		Mn II	8	3726.235		Cb I	3
3709.64		Ne II	1	3717.55		V I	114	3726.653		Co I	40
3709.665		Fe I	225	3717.63		P III	10	3726.805		Sm II	19
3709.88		Mn II	8	3717.63		P IV	3	3726.85		Cr I	73
3709.90		A II	67	3717.69		Eu II		3726.89	P	Fe I	75
3709.933		Ce II	40	3717.73	P	Fe I	997	3726.926		Ru I	2
3709.963		Ti I	83	3717.775		S III	6	3726.927		Fe I	385
3710.01	P	Cr II	6	3717.84	P	Fe I	706	3726.931		Mn I	24
3710.186		Ti I	222	3717.915		Tm I		3727.03	P	Fe I	668
3710.22	P	Cr II	6	3717.94		Cl II	63	3727.04	P	Fe II	192
3710.30		Y II	7	3718.159		V II	21	3727.08		Ne II	5
3710.42		S III	1	3718.190		Ce II	53	3727.09		Y II	74

I A	Type	Element	Multiplet No.
3727.096		Fe I	387
3727.33		O II	3
3727.351		V II	21
3727.37		Cr II	117
3727.53	P	Fe I	705
3727.621		Fe I	21
3727.67	P	Fe I	225
3727.72		Zr II	112
3727.809		Fe I	386
3728.030		Ru I	2
3728.130		Nd II	
3728.335		V II	116
3728.423		Ce II	47
3728.469		Sm II	54
3728.49		O III	30
3728.668		Fe I	227
3728.67		P II	22
3728.67		P IV	3
3728.676		Ti I	116
3728.82		O III	30
3728.840		Co I	133
3728.889		Mn I	24
3728.933		Ni I	181
3729.03		O IV	6
3729.035		V I	91
3729.29		A II	10
3729.34	P	Fe I	530
3729.34		O II	62
3729.49		Mn II	8
3729.70		O III	30
3729.74		Zr II	8
3729.806		Ti I	17
3730.386		Fe I	533
3730.433		Ru I	2
3730.46	P	Fe I	389
3730.476		Co I	62
3730.64		S II	
3730.751		Ni I	2
3730.807		Cr I	2
3730.810		Tm II	11
3730.84		Gd II	20
3730.945		Fe I	228
3731.15	P	Fe I	950
3731.258		Sm II	11
3731.26		Zr II	112
3731.268		Co I	96
3731.374		Fe I	225
3731.42		La II	137
3731.64		V II	101
3731.932		Mn I	
3731.950		Al II	11
3731.983		V II	92
3732.032		Cr I	2
3732.13	P	Fe I	532
3732.13		O III	14
3732.390		Co I	62
3732.399		Fe I	76
3732.45		Gd II	5
3732.760		V II	15
3732.861		He I	24
3732.992		Re I	24
3733.08		Gd II	
3733.20	P	Fe I	225
3733.319		Fe I	5
3733.36		A II	68
3733.483		Co I	98
3733.607		V II	116
3733.73		Cl II	63
3733.767		Ti I	166
3733.910		Al II	11
3734.124		Tm II	6
3734.139		Co I	96
3734.370		H	3
3734.428		V I	97
3734.454		Ru II	1
3734.567		Al II	50
3734.715		Al II	50
3734.80		O III	21
3734.805		Al II	50
3734.867		Fe I	21
3734.94		Ne II	1
3735.158		V II	102
3735.325		Fe I	388
3735.49		A II	3
3735.660		Ti I	
3735.71	P	Fe I	127
3735.85		La II	29
3735.928		Co I	95
3735.94		O II	62
3735.980		Sm II	29
3736.017		V II	102
3736.280		Be I	6
3736.41		La II	142
3736.45		Cr I	215
3736.56		Cr II	20
3736.78		O IV	6
3736.813		Ni I	30
3736.901		Ca II	3
3737.133		Fe I	5
3737.141		Sm II	
3737.55		Cr II	117
3737.88		Hf II	75
3737.89		A II	131
3737.992		V I	91
3738.003		Al II	11
3738.08		Eu II	
3738.13		Zr II	17
3738.308		Fe I	609
3738.38		Cr II	20
3738.51	P	Fe I	918
3738.757		V I	97
3738.901		Ti I	166
3739.117		Sm II	
3739.120		Fe I	75
3739.13		K II	1
3739.193		Pr II	
3739.197		Sm II	5
3739.229		Ni I	2
3739.317		Fe I	74
3739.527		Fe I	
3739.6		Ti II	107
3739.782		Ni I	180
3739.80		Cb I	3
3739.92		O II	31
3739.940		Pb I	2
3740.061		Fe I	532a, 707
3740.241		V I	98
3740.247		Fe I	667
3741.059		Ti I	17
3741.288		Sm II	
3741.31		Eu II	11
3741.427		Nd II	
3741.504		V I	124
3741.56	P	Fe II	15
3741.633		Ti II	72
3741.69		O II	38
3741.727		Ce II	241
3742.07		Fe I	225
3742.14	P	Fe I	978
3742.20	P	Cr II	6
3742.280		Ru I	2
3742.34		Mo II	5
3742.393		Cb I	3
3742.56	P	Fe I	389
3742.621		Fe I	387
3742.937		Fe I	704
3742.968		Cr I	43
3742.99	P	Cr II	6
3743.20	P	Cr II	6
3743.364		Fe I	21
3743.40		Fe III	
3743.468		Fe I	806
3743.47		Gd II	2
3743.556		Eu II	11
3743.578		Cr I	43
3743.610		V II	21
3743.78	P	Fe I	290
3743.868		Sm II	18,34
3743.884		Cr I	43
3744.066		Tm I	
3744.105		Fe I	385
3744.22		P III	10
3744.42		K II	3
3744.490		Cr I	43
3744.562		Ni I	180
3744.66		Ne II	40
3744.73		O IV	6
3744.98		Hf II	76
3745.36	P	Fe II	131
3745.491		Co I	34
3745.561		Fe I	5
3745.605		Sm II	2
3745.806		V II	15
3745.83		N III	4
3745.901		Fe I	5
3745.97		Zr II	112
3746.46		A II	130
3746.486		Fe I	73
3746.56	P	Fe II	14
3746.92		A II	67
3746.931		Fe I	386
3747	P	O V	8
3747.00	P	Fe I	388
3747.264		Cr I	289
3747.40	P	Fe III	71
3747.48		Hf II	27
3747.55		Y II	8
3747.66		N IV	8
3747.90		S III	1
3747.96		La II	
3747.982		V I	97,98
3748.010		Ti II	107
3748.056		Ce II	160
3748.101		Ti I	166
3748.18		Cr I	88
3748.264		Fe I	5
3748.374		Ca I	27
3748.46		Cl II	6
3748.489		Fe II	154
3748.492		Fe I	805
3748.614		Cr I	43
3748.68		Cr II	11
3748.73		S III	
3748.81		Cl III	5
3748.88		Gd II	105
3748.91	P	Fe I	289
3748.969		Fe I	386
3748.998		Cr I	43
3749.045		Ni I	1
3749.487		Fe I	21
3749.49		O II	3
3749.55	P	Zr II	112
3749.930		Co I	95
3750.00		Cl II	6
3750.154		H	2
3750.349		Ca I	27
3750.50		A II	3
3750.56		Cr II	
3750.65		Zr II	18
3750.677		Fe I	225
3750.74		S III	1
3750.763		Mn I	24
3750.88		V II	21
3751.059		Fe I	667
3751.06		A II	81
3751.09	P	Fe I	74
3751.222		V II	100
3751.26		Ne II	1
3751.60		Cr II	117
3751.60		Zr II	71
3751.625		Co I	98
3751.812		Tm I	
3751.820		Fe I	287
3752.420		Fe I	385,392
3752.524		Os I	2
3752.65	P	N III	11
3752.679		Nd II	33
3752.860		Ti I	17
3753.10		Al II	39
3753.154		Fe I	177
3753.18		Fe III	83
3753.26	P	Cr II	20
3753.367		Ca I	27
3753.53		A II	80,128
3753.610		Fe I	73
3753.623		Ti I	17
3753.83		Ne II	38
3754.06		A II	115
3754.12	P	Rh II	7
3754.346		Co I	132
3754.506		Fe I	386
3754.59		Cr II	20
3754.62		N III	4
3754.67		O III	2
3754.89	P	Fe I	949
3755.13		Cr II	20
3755.276		Sm II	34
3755.425		Ce II	128
3755.447		Co I	96
3755.54		Mo II	5
3755.56		Gd II	85
3755.563		Fe II	154
3755.61		Ca II	8
3755.701		V I	124
3755.81		Cr I	72
3755.82	P	O IV	6
3756.069		Fe I	74
3756.10		He I	66
3756.411		Sm I	2
3756.411		Sm II	44

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3756.55		Cr II	144	3765.542		Fe I	608	3775.860		Fe I	287
3756.83		Cr I	72	3765.62		Cr II	20	3776.062		Ti II	72
3756.860		Tm II	9	3765.70		Fe I	608	3776.454		Fe I	74
3756.939		Fe I	805	3765.93		Eu II	11	3776.527		Mn I	6
3756.96		Zr II	8	3766.092		Fe I	226	3776.56		Y II	8
3757.093		W I	3	3766.13		A II	29	3776.80		S II	51
3757.174		Cr I	43	3766.29		Ne II	1	3777.061		Fe I	432
3757.21		O III	2	3766.445		Ti I	82	3777.16		Ne II	1
3757.459		Fe I	668	3766.514		Ce II	124	3777.32		Cr I	41
3757.529		Sm II		3766.65		Cr II	20	3777.43		Fe III	95
3757.60	P	N III	11	3766.665		Fe I	386	3777.448		Fe I	223
3757.66	P	N III	11	3766.71		Zr I	10	3777.543		Co I	96
3757.662		Cr I	43	3766.83		Zr II	7	3777.55		A II	81
3757.684		Ti II	72	3766.92		Hf II	75	3777.60		O II	31
3757.80		Zr II	120	3767.04		Gd II	20	3777.64		Hf I	1
3757.862		Ce II	48	3767.05		La II	151	3777.919		Ru II	1
3757.929		W I	4	3767.18	P	Cr II	20	3777.93		Cr I	41
3758.044		Cr I	43	3767.194		Fe I	21	3778.063		Ni I	15
3758.11	P	Fe I	704	3767.358		Sm II	46	3778.136		Sm II	
3758.22		V II	100	3767.36		K II	2	3778.320		Fe I	367
3758.235		Fe I	21	3767.431		Cr I	42	3778.357		V II	21
3758.31		Gd II	20	3767.57		Cl II	6	3778.37	P	Fe II	192
3758.36		Ca II	8	3767.720		V II	100	3778.509		Fe I	664
3758.45		O IV	6	3767.73	P	Fe I	918	3778.684		V I	28
3758.72		Cr I	12	3767.755		Sm II		3778.69		Cr II	
3758.9		Y II	74	3767.89		Zr II	31	3778.697		Fe I	73
3758.944		Nd II		3768.030		Fe I	73	3778.90		S III	5
3758.968		Sm II		3768.08		Cr I	42	3779.213		Fe I	290
3759.00		Gd II	2	3768.13		Cl II	6	3779.23	P	N III	11
3759.08		La II	13	3768.23		Fe I	368	3779.35		Cl III	8
3759.155		Fe I	855	3768.240		Cr I	43	3779.424		Fe I	222
3759.291		Ti II	13	3768.39		Gd II	2	3779.444		Fe I	665
3759.460		Fe II	154	3768.57	P	Cr II	6	3779.486		Fe I	74
3759.556		Cb I	3	3768.62		Cr I	42	3779.58	P	Fe II	23
3759.684		Co I	131	3768.71		P II	1	3779.648		V I	69
3759.87		O III	2	3768.734		Cr I	43	3780.09		Hf II	18
3760.031		Ru I	2	3768.81		He I	65	3780.391		Nd II	19
3760.052		Fe I	177	3769.00		Cr I	42	3780.53		La II	141
3760.133		W I	3	3769.046		Ce II	50	3780.53		Zr I	8
3760.24		V II	21	3769.13		Cl II	6	3780.67		La II	55
3760.401		Co I	40	3769.37	P	Cr II	6	3780.763		Sm II	
3760.404		Ce II	109	3769.45		Gd II	37	3780.770		W I	8
3760.534		Fe I	76	3769.455		Ni II	4	3780.84		A II	54
3760.694		Ce II	92	3769.644		Nd II	67	3780.927		Sm II	38
3760.694		Sm II	18,51	3769.695		Pr II	16	3781.188		Fe I	74
3760.71		Gd II	37	3769.995		Fe I	387	3781.23		Cl II	72
3760.92		Gd II	20	3770.305		Fe I	287	3781.379		Cb II	9
3761.06	P	Fe I	706	3770.37	P	N III	11	3781.393		V I	10,97
3761.12		Eu II	11	3770.405		Fe I	177	3781.510		Fe II	130
3761.20		V II	129	3770.412		Ti II	107	3781.597		Mo I	8
3761.320		Ti II	13	3770.517		Mo I	8	3781.620		Ce II	163
3761.331		Tm II	2	3770.54		A II	42	3781.68		He II	5
3761.416		Fe I	227	3770.632		H	2	3781.938		Fe I	917
3761.442		V I	97	3770.69		Gd II		3782.139		Ti I	82
3761.62		Ca III	3	3770.974		V II	21	3782.195		Os I	3
3761.69		Cr II	11	3771.08		N III	4	3782.24		Zr II	44
3761.72		Ca I	8	3771.36		Hf II	29	3782.302		Y II	61
3761.82		P II	1	3771.45	P	N III	11	3782.34		Gd II	
3761.866		Ti II	107	3771.50	P	Fe I	607	3782.450		Fe I	388
3761.867		Pr II		3771.652		Ti I	17	3782.524		Ce II	142
3761.90		Cr II	11	3771.98		Zr II	44	3782.6		S II	23
3761.913		Tm II	2	3772.06		Zr II	31	3782.608		Fe I	491
3762	P	O V	8	3772.530		Ni I	15	3782.72		Zr II	120
3762.205		Fe I	705	3772.854		Pr II		3782.78		Hf II	26
3762.41		Si IV	3	3772.962		V II	100	3783.16		S II	41
3762.51		Hf II	101	3773.12		La II	141	3783.19		K II	2
3762.588		Sm II	25	3773.13		Si IV	3	3783.347		Fe II	14
3762.618		Ni I		3773.364		Fe I	531	3783.530		Ni I	30
3762.62	P	N III	11	3773.68		Cl II	6	3783.561		Tm II	11
3762.63		O II	31	3773.699		Fe I	386	3784.250		Nd II	
3762.894		Fe II	192	3773.80		Fe III	34	3784.27	P	Fe I	607
3763.00		Gd II	1	3773.80		V II	129	3784.81		La II	13
3763.13		Cb II	10	3774.00		O III	2	3784.886		He I	64
3763.141		V I	98	3774.25		Cl II	6	3785.01		O II	95
3763.33		Gd II	37	3774.294		Sm II	43	3785.421		Mn I	45
3763.356		Mo I	8	3774.3		Al II	33	3785.706		Fe I	608
3763.377		Mn I	24	3774.33		Y II	7	3785.78	P	Fe I	704
3763.475		Nd II		3774.331		Ti I	16	3785.950		Fe I	177
3763.52		A II	54	3774.38	P	O IV	6	3786.043		Ti I	57
3763.57	P	Fe I	128	3774.52		S III	10	3786.176		Fe I	367
3763.790		Fe I	21	3774.54		A II		3786.22		Cr I	71
3764.09		Fe II	29	3774.599		Co I	96	3786.253		Ti I	165
3764.117		Ce II	41	3774.645		Mn I	45	3786.33	P	Ti II	12
3764.21	P	Fe I	74	3774.650		Ti II	12	3786.37	P	Fe II	15
3764.370		Sm II	34	3774.678		V II	129	3786.40		A II	3
3764.38		Zr I	10	3774.823		Fe I	73	3786.632		Ce II	51
3764.60		Gd II	85	3775.03		P II	19	3786.678		Fe I	22
3764.811		Pr II		3775.187		V I	97	3786.70		P II	1
3765.044		Ce II	208	3775.572		Ni I	33	3786.94		Fe III	71
3765.27		A II	42	3775.724		Tl I	1	3787.064		Cb I	3

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3787.164		Fe I	916	3796.90		Fe I	667	3807.505		V I	28
3787.203		Sm II	5	3796.99		Cr I	41	3807.534		Fe I	73
3787.235		V II	100	3797.126		Cr I	139	3807.65		Gd II	85
3787.56		Gd II	20	3797.283		Sm II	11	3807.926		Cr I	139
3787.883		Fe I	21	3797.517		Fe I	607	3808.102		Co I	17
3787.89	P	Cr II	6	3797.716		Cr I	139	3808.124		Ce II	59
3788.125		Sm II	25	3797.730		Sm II		3808.286		Fe I	489
3788.474		Rh I	6	3797.900		H	2	3808.521		V I	9
3788.70		Y II	7	3797.948		Fe I	222	3808.61		A II	3
3788.753		Ce II	47	3797.95		Hf II	29	3808.7		Y II	73
3788.804		Ti I	16	3798.127		Cb I	3	3808.731		Fe I	222
3788.864		Cr I	139	3798.259		Mo I	1	3808.772		Nd II	
3788.91		Fe III	102	3798.276		Ti I	115	3808.79		La II	43
3789.178		Fe I	289	3798.36	P	Fe II	14	3809.043		Fe I	367
3789.293		Ti I	115	3798.513		Fe I	21	3809.224		Ce II	204
3789.49		Cr I	41	3798.60	P	Fe II	23	3809.49		A II	42
3789.570		Fe I	226	3798.661		V I	80	3809.51		Cl II	62
3789.723		Cr I	24	3798.752		Tm II	11	3809.592		Mn I	6
3789.82	P	Fe I	702	3798.80		Cl II	62	3809.597		V I	28
3790.095		Fe I	22	3798.901		Ru I	1	3809.67		S II	50
3790.138		Cb I	3	3799.009		Eu II	11	3810.10		Cl II	62
3790.215		Mn I	6	3799.038		Ce II	136	3810.21	P	Fe II	143
3790.228		Cr I	139	3799.17		Pd I	1	3810.59		Hf II	96
3790.24	P	Fe I	224	3799.259		Mn I	6	3810.724		Tm II	9
3790.324		V I	28	3799.311		Rh I	8	3810.759		Fe I	665
3790.454		Cr I	139	3799.347		Ru I	1	3810.90	P	Fe I	224
3790.469		V I	69	3799.39		A II	54	3810.96		O III	2
3790.656		Fe I	387	3799.542		Sm II	22	3811.05		Fe I	223,287
3790.756		Fe I	73,127	3799.549		Fe I	21	3811.065		Co I	31
3790.83		La II	12	3799.81		Ti II	13	3811.073		Nd II	69
3790.96		Ne II	30	3799.912		V I	28	3811.22		A II	81
3791.17		Gd II	85	3800.02		Ne II	39	3811.32		Ni I	15
3791.209		Cb I	2	3800.122		Ir I	1	3811.35		O VI	1
3791.26		O III	2	3800.240		Mn II	14	3811.385		Ti I	165
3791.326		V I	10	3800.303		Pr II		3811.774		Nd II	31
3791.376		Cr I	139	3800.370		Sm II	43	3811.80	P	Fe I	701
3791.39		Zr I	8	3800.39		Hf II	18	3811.80		S II	
3791.41		Si III	5	3800.43		Fe III	47	3811.892		Fe I	287
3791.504		Fe I	223	3800.552		Mn I	45	3812.067		Sm II	10
3791.72		Gd II	46	3800.73		Zr II	17	3812.18		Y II	61
3791.73		Fe I	703	3800.883		Y II	61	3812.250		Cr I	214
3792.025		Sm II	5	3800.887		Sm II	29	3812.470		Co I	40
3792.137		Cr I	139	3801.022		Sn I	2	3812.964		Fe I	22
3792.156		Fe I	287	3801.093		Ti I	165	3813.059		Fe I	222
3792.32		Zr II	81	3801.21		Cr II		3813.07	P	Fe I	176
3792.326		Ce II	129	3801.29		Gd II		3813.12		V II	128
3792.337		Ni I	2	3801.529		Ce II	172	3813.261		Ti I	189
3792.42		Cr I	71	3801.633		Mn II	14	3813.390		Ti II	12
3792.46		S II	50	3801.681		Fe I	367	3813.402		Be I	5
3792.524		Pr II		3801.804		Fe I	367	3813.45	P	V I	28
3792.56		Y II	61	3801.907		Mn I		3813.492		V I	9
3792.834		Fe I	74	3801.975		Fe I	704	3813.50		He II	4
3792.87		N III	11	3802.08		P III	10	3813.638		Fe I	283
3793.217		Rh I	9	3802.283		Fe I	666	3813.8		Y II	72
3793.28	P	Fe I	386	3802.65		S II	50	3813.891		Fe I	854
3793.289		Cr I	139	3802.883		V I	67	3813.94	P	Fe I	176
3793.354		Fe I	388	3802.928		Cb I	3	3813.97		Gd II	2
3793.37		Hf II	1	3802.958		Mn II	14	3813.98		Zr II	100
3793.478		Fe I	387	3803.097		Ce II	37	3814.00		Cr II	
3793.52		Fe III	71	3803.14		O II	34	3814.121		Fe II	153
3793.608		Ni I	4	3803.19		A II	129	3814.42		Ra II	1
3793.61		P II	1	3803.24	P	Fe I	122	3814.457		Co I	62
3793.614		V I	9	3803.474		Nd II		3814.526		Fe I	22
3793.75		Cl II		3803.474		V I	28	3814.580		Ti II	12
3793.872		Fe I	367	3803.784		V I	68	3814.622		Cr I	214
3793.879		Cr I	139	3803.881		Mn II	14	3814.725		Nd II	
3793.971		Sm II	11	3803.902		V I	10	3814.855		Ti I	189
3794.340		Fe I	177	3804.013		Fe I	702	3814.97		Zr II	8
3794.366		V II	100	3804.476		Mn II	14	3815.012		Rh II	7
3794.48		O II	34	3804.589		V I	97	3815.38		V II	166
3794.608		Cr I	139	3804.798		Cr I	139	3815.433		Cr I	71
3794.69		S III	10	3805.24		Cl II	62	3815.495		Eu II	
3794.78		La II	12	3805.345		Fe I	608	3815.514		V I	28
3794.964		V I	9,28	3805.359		Nd II	19	3815.831		Ce II	37
3795.004		Fe I	21	3805.626		Sm II	10	3815.842		Fe I	45
3795.10		P II	1	3805.765		He I	63	3816.166		Pr II	
3795.169		Tm II	6	3806.07		Hf II	75	3816.173		Cr I	40
3795.256		Ce II	50	3806.203		Fe I	731	3816.25		La II	134
3795.37		A III	5	3806.30		Ne II	30	3816.318		Co I	62
3795.759		Tm II	6	3806.55		Cr I	24	3816.340		Fe I	73
3795.903		Ti I	115	3806.56		Si III	5	3816.458		Co I	62
3796.00		Fe I	176	3806.697		Fe I	607	3816.64		Gd II	1
3796.11		Si III	5	3806.719		Mn I	6	3816.75		O III	18
3796.33		He II	5	3806.76	P	Fe I	224	3816.753		Mn I	6
3796.37		Gd II	2	3806.796		V I	68	3816.876		Co I	86
3796.47		Zr II	71	3806.82	P	Fe II	153	3816.92	P	Fe I	387
3796.48		V II	167	3806.829		Cr I	214	3817.20		Hf II	62
3796.55	P	Fe II	143	3807.144		Ni I	33	3817.24		La II	168
3796.60		A II	129	3807.227		Nd II	19	3817.395		Tm II	
3796.899		Ti II	12	3807.41		Zr II	31	3817.455		Ce II	222

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3817.59		Zr II	18	3827.079		Fe II	153	3836.10		C II	13
3817.639		Ti I	189	3827.27		Zr II		3836.112		Ce II	60
3817.64		Fe I	701	3827.46		P II	26	3836.332		Fe I	664
3817.844		Cr I	40	3827.51		Zr II	121	3836.541		Nd II	
3817.844		V I	10	3827.572		Fe I	284	3836.76		Zr II	16
3817.940		Co I	131	3827.62		Cl II	69	3836.763		Ti I	
3818.244		V I	9	3827.67	P	Fe II	128	3836.91		Gd II	20
3818.27		N I	11	3827.825		Fe I	45	3837.132		Fe I	222
3818.281		Pr II		3828.180		Ti I	189	3837.210		Ce II	112
3818.34		Y II	7	3828.44		Fe III	70,95	3837.80		S III	5
3818.40		Cl II	62	3828.510		Fe I	287	3838.094		He I	61
3818.44		Ne II	39	3828.559		V I	9	3838.198		Tm II	11
3818.481		Cr I	40	3828.836		V I	67	3838.28		Zr II	17
3818.78		Zr II	111	3828.883		Mo I	8	3838.2918		Mg I	3
3818.862		Cb II	10	3829.125		Fe I	948	3838.2943		Mg I	3
3819.04		A II	129	3829.133		W I	3	3838.316		S III	5
3819.25	P Forb	He I	23	3829.27		Cl II	9	3838.37		Cl II	69
3819.50	P	Fe I	703	3829.3549		Mg I	3	3838.39		N II	30
3819.564		Cr I	70	3829.458		Fe I	366,663	3838.542		Ce II	114
3819.57	P	Cr I	88	3829.47	P Forb	He I	21	3838.941		Sm II	34
3819.606		He I	22	3829.53		V II	3	3838.981		Nd II	28
3819.62	P	Fe I	122	3829.655		V II	3	3839.002		V I	44
3819.67		Eu II	1	3829.680		Mn I	6	3839.259		Fe I	529
3819.761		He I	22	3829.77		Ne II	39	3839.614		Fe I	995
3819.84		Zr II	81	3829.771		Fe I	221	3839.64		Gd II	20
3819.908		Co I	130	3829.80		N II	30	3839.777		Mn I	6
3819.963		V I	28	3830.032		Cr I		3840.140		V I	66
3819.97		Cr I	40	3830.293		Sm II	10	3840.20	P	Fe I	120
3820.25		Cl II	69	3830.39		N I	11	3840.439		Fe I	20
3820.299		V I	44	3830.43		A II	3,128	3840.44	P	V I	44
3820.428		Fe I	20	3830.45		O II	34	3840.70		Cr I	70
3820.74		Hf I	5	3830.719		Pr II		3840.72		La II	28
3820.871		Ce II	208	3830.757		Fe I	224	3840.752		V I	9
3820.874		Cr I	40	3830.80		Cl II	69	3841.051		Fe I	45
3821.181		Fe I	608	3830.850		Fe I	284	3841.082		Mn I	6
3821.487		V I	28	3831.017		V II	3	3841.17		Lu I	3
3821.582		Cr I	40	3831.032		Cr I	24	3841.277		Cr I	69
3821.68		O II	34	3831.41		S II		3841.35	P	Fe II	128
3821.834		Fe I	222	3831.501		Sm II	43	3841.458		Co I	32
3821.92	P	Fe II	14	3831.690		Ni I	31	3841.54		A II	54
3822.009		V I	9	3831.75		Fe III	109	3841.890		V I	8
3822.026		Ti I	189	3831.80		Gd II	3	3842.03		Cr I	70
3822.07		N I	11	3831.840		Cb II	10	3842.037		Al II	49
3822.10		Cr I	40	3831.85		S III	5	3842.047		Co I	33
3822.17		Gd II	19	3832.12		C II	13	3842.20		Gd II	
3822.262		Rh I	8	3832.2996		Mg I	3	3842.20		N II	30
3822.41		Zr I	10	3832.3037		Mg I	3	3842.213		Al II	49
3822.63	P	O I	36	3832.31		Pd I	1	3842.317		Al II	49
3822.737		Fe II		3832.32		Cr I	24	3842.82		O II	12
3822.888		V I	28	3832.745		Ce II	115	3842.90	P	Fe I	222
3822.987		Mo I	8	3832.835		V I	80	3842.975		Fe I	221
3823.213		V I	28	3832.873		Ni I	1	3843.000		Sc II	1
3823.41		Zr II	44	3832.89		Y II	7	3843.03		Zr II	7
3823.469		O I	36	3832.94		Zr II	7	3843.16	P	Sc II	17
3823.513		Mn I	6	3833.02	P	Fe II	23	3843.259		Fe I	528
3823.522		Cr I	24	3833.059		Sc II	1	3843.26		Cl II	49
3823.571		Pr II	14	3833.10		O II	13	3843.500		Sm II	43
3823.72		Zr II	31	3833.186		Ti I		3843.58		O II	13
3823.893		Mn I	6	3833.226		V I	67	3843.64		Cr I	87
3823.903		Ce II	115	3833.311		Fe I	221	3843.692		Co I	84
3823.990		V I	44	3833.40		Cl II	69	3843.72	P	Fe I	703
3824	P	N IV	10	3833.49		Cr I	11	3843.80		Gd II	17
3824.074		Fe I	224	3833.574		He I	62	3843.983		Mn I	6
3824.175		Sm II	18	3833.674		Ti I		3844.276		Ni I	137
3824.306		Fe I	607	3833.71		Cr I	70	3844.438		V I	7
3824.425		O I	36	3833.757		Mo I	8	3844.48	P	V II	20
3824.444		Fe I	4	3833.80		He II	4	3844.579		Gd II	2
3824.47		Cl III	9	3833.828		Sm II	29	3844.58		Ni I	181
3824.73	P	Fe I	221	3833.862		Mn I	6	3844.75		A II	54
3824.78		Y II	72	3833.87		Zr II	100	3844.892		V I	44
3824.882		Cb I	2	3833.889		Rh I	9	3845.170		Fe I	124
3824.913		Fe II	29	3834.22	P	V I	80	3845.18	P	Fe II	127
3825.090		O I	36	3834.225		Fe I	20	3845.21	P	Fe I	701
3825.249		O I	36	3834.24		N I	11	3845.21		S II	22
3825.390		Cr I	70	3834.24		O VI	1	3845.42		A II	9
3825.404		Fe I	123	3834.364		Mn I	6	3845.42		Cl II	25
3825.530		O I	36	3834.46	P	Fe I	663	3845.468		Co I	34
3825.70		A II	129	3834.556		Ce II	49	3845.68		Fe III	35
3825.884		Fe I	20	3834.735		Cr I	70	3845.69		Cl II	25
3826.05		Gd II	19	3834.81	P	Fe II	129	3845.692		Fe I	771
3826.202		Sm II	51	3835.058		W I	2	3845.84		Cl II	25
3826.292		Pr II		3835.09		La II	55	3845.974		V I	
3826.416		Nd II	33	3835.386		H	2	3846.00		La II	26
3826.425		Cr I	70	3835.497		Co I	114	3846.001		Fe I	703
3826.63	P	Fe I	176	3835.560		V I	44	3846.29	P	Fe I	947
3826.701		Mo I	8	3835.725		Sm II	18	3846.31	P	Fe II	128
3826.774		V I	44	3835.96		Zr I	8	3846.412		Fe I	804
3826.83		A II	54	3836.054		V I	44	3846.438		Ti I	
3826.836		Fe I	283	3836.070		Cr I	70	3846.516		Y II	83
3826.968		V II	128	3836.085		Ti II	12	3846.605		Pr II	

I A	Type	Element	Multiplet No.
3846.803		Fe I	664
3846.949		Fe I	176
3847.01		Zr I	10
3847.086		F II	1
3847.252		Mo I	8
3847.323		V I	7
3847.323		V II	156
3847.38		N II	30
3847.501		W I	4
3847.511		Sm II	34
3847.89		O II	12
3848.023		Tm II	2
3848.194		Y II	72
3848.233		Nd II	19
3848.24		Mg II	5
3848.29	P	Fe I	224
3848.524		Nd II	
3848.597		Ce II	36
3848.779		Sm II	
3848.983		Cr I	69
3849.02		La II	12
3849.26		Zr I	6
3849.324		V I	
3849.365		Cr I	138
3849.52		Hf II	61
3849.534		Cr I	24
3849.58		Ni II	11
3849.758		V II	33
3849.969		Fe I	20
3849.987		F II	1
3850.042		Cr I	69
3850.40		Mg II	5
3850.409		V II	11
3850.57		A II	10
3850.69		Gd II	2
3850.81		O II	12
3850.820		Fe I	22
3850.825		Pr II	
3850.93		S II	50
3850.945		Co I	17
3850.97		Cl II	25
3850.97		Gd II	2
3851.04		O II	12
3851.171		V I	44
3851.38		Cl II	25
3851.47		O II	13
3851.58		Fe I	
3851.617		Pr II	
3851.667		F II	1
3851.69		Cl II	25
3851.748		Nd II	35
3851.848		Co I	128
3851.880		Sm II	29
3852.10		V II	3
3852.218		Cr I	24
3852.45		Gd II	2
3852.574		Fe I	73
3852.58		Cr I	11
3852.805		Pr II	
3853.038		Ti I	176
3853.07		Zr II	81
3853.09		S II	30
3853.164		Ce II	39
3853.176		Cr I	69
3853.462		Fe I	429
3853.657		Si II	1
3853.719		Ti I	176
3854.177		Gd II	50
3854.187		Ce II	62
3854.209		Sm II	
3854.220		Cr I	69
3854.322		Ce II	61
3854.375		Fe I	567
3854.75		Cl II	84
3854.905		Pr II	
3854.91		La II	55
3855.08		N II	30
3855.18		A II	81
3855.286		Cr I	69
3855.329		Fe I	283
3855.370		V I	7
3855.43		Zr II	18
3855.56		Gd II	2
3855.571		Cr I	69
3855.65	P	Cr I	138
3855.841		V I	9
3855.846		Fe I	567
3856.021		Si II	1
3856.07		N II	30
3856.16		A II	55
3856.16		O II	12
3856.281		Cr I	69
3856.373		Fe I	4
3856.515		Rh I	7
3856.796		Co I	60
3857.032		Ce II	158
3857.18		O II	13
3857.240		Ce II	127
3857.26	P	Y II	16
3857.631		Cr I	69
3857.912		Sm II	28
3858.07		He II	4
3858.133		Ti I	176
3858.301		Ni I	32
3858.32		A III	5
3858.48	P	Fe I	565
3858.90		Cr I	138
3859.21		Fe I	175
3859.24		Mg I	21
3859.26		S II	30
3859.33		Al II	38
3859.341		V I	44
3859.36	P	Sc II	1
3859.913		Fe I	4
3860.12	P	Fe II	128
3860.13		Cr I	39
3860.15		S II	41
3860.46		Fe III	109
3860.64		S II	50
3860.64		S III	5
3860.74	P	Fe I	701
3860.80		Cl II	25
3860.915		Fe II	
3860.98		Cl II	25
3861.079		Ti I	
3861.164		Co I	33
3861.18		Eu II	
3861.341		Fe I	283,663
3861.40		Cl II	25
3861.60		Fe I	663
3861.95		Cl II	84
3862.054		Sm II	10
3862.17	P	Cr II	129
3862.223		V I	8
3862.592		Si II	1
3862.823		Ti I	175
3863.056		Cb II	9
3863.072		Ni I	181
3863.327		Nd II	27
3863.409		Nd II	26
3863.413		Fe II	152
3863.50		O II	12
3863.607		Co I	131
3863.70	P	Fe I	565
3863.745		Fe I	280
3863.81		V II	33
3863.866		V I	66
3863.88		Zr I	8
3863.953		Fe II	127,152
3864.115		Mo I	1
3864.13		O II	11
3864.30	P	Fe I	565
3864.300		V I	64
3864.31	P	Fe I	221
3864.33		Zr I	10
3864.335		W I	3
3864.45		O II	12
3864.49		La II	141
3864.60		Cl II	84
3864.68		O II	12
3864.75		Hf II	98
3864.862		V I	7
3865.458		Pr II	
3865.526		Fe I	20
3865.59		Cr II	167
3865.72		V II	20
3866.01		Cr II	130
3866.160		Al II	17
3866.446		Ti I	176
3866.54		Cr II	130
3866.744		V II	11
3867.219		Fe I	488
3867.26		Gd II	50
3867.32		Hf II	53
3867.45	P	Fe I	221
3867.477		He I	20
3867.56		S I	
3867.602		V I	7
3867.631		He I	20
3867.739		Ti I	176
3867.839		Ru I	9
3867.925		Fe I	221
3867.986		W I	7
3868.243		Fe I	430
3868.397		Ti I	175
3868.53		A II	90
3868.62		Cl II	84
3868.84		C II	18
3869.045		Nd II	34
3869.085		Mo I	8
3869.10		N I	
3869.275		Ti I	175
3869.562		Fe I	284
3869.590		Fe I	284
3869.61		A II	80
3870.057		Al II	74
3870.267		Cr I	11
3870.506		Ca I	26
3870.534		Co I	129
3871.078		V I	66
3871.54		Gd II	1
3871.60		Ni I	181
3871.62		C II	18
3871.64		La II	13
3871.750		Fe I	429
3871.778		Sm II	18
3871.819		He I	60
3872.15		A II	54
3872.308		Y II	61
3872.45		O II	11
3872.504		Fe I	20
3872.55		Hf II	27
3872.552		Ca I	26
3872.62		Gd II	19
3872.748		V I	43
3872.76	P	Fe II	29
3872.835		W I	4
3872.923		Fe I	284
3872.98	P	Fe II	128
3873.120		Co I	18
3873.203		Ti I	176
3873.74		K II	3
3873.763		Fe I	175
3873.953		Co I	18
3874.053		Fe I	120
3874.10		O II	11
3874.37		Zr II	89
3874.41	P	Cr II	143
3874.570		Cr I	138
3874.76	P	Cr II	143
3875.036		Ce II	162
3875.075		V I	7
3875.14		Cr I	138
3875.193		Sm II	
3875.26		A II	2
3875.262		Ti I	15,175
3875.426		V I	43
3875.46		Gd II	50
3875.545		Sm II	17
3875.67		V II	20
3875.807		Ca I	26
3875.82		O II	13
3875.902		V I	7
3876.043		Fe I	22
3876.051		C II	33
3876.086		V I	8
3876.188		C II	33
3876.409		C II	33
3876.65		Lu II	3
3876.670		C II	33
3876.671		Fe I	121
3876.831		Co I	17,62
3876.974		Ce II	82
3877.11		Hf II	75
3877.225		Pr II	
3877.591		Ti I	175
3877.60		Zr I	58
3878.021		Fe I	20
3878.180		He I	59
3878.19	P	Fe I	565
3878.22		C II	33
3878.28		Y II	7
3878.372		Ce II	48
3878.575		Fe I	4
3878.58		Mg I	20
3878.582		Nd II	
3878.61	P	Ti I	164
3878.663		Fe I	175
3878.715		V II	33
3878.726		Fe I	664

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3878.750		Co I	62	3889.948		Ti I	15	3900.546		Ti II	34
3879.04		Zr I	6	3889.990		Ce II	50	3900.63		A II	54
3879.222		Cr I	138	3890.080		Sm II	17	3900.64		Hf II	103
3879.60		C II	33	3890.184		V I	8	3900.680		Al II	1
3880.34		A II	54	3890.241		Mg I	47	3900.790		Tm II	9
3880.466		Pr II		3890.32		Zr I	8	3900.958		Ti I	15
3880.59		C II	33	3890.39		Fe I	567	3901.03	P	Fe I	834
3880.766		Sm II	10	3890.528		Tm II	1	3901.152		V I	126
3880.779		Nd II	32	3890.580		Nd II		3901.33	P	V II	20
3880.82		Hf II	6	3890.82		Cr I	262	3901.775		Mo I	8
3881.04		V II	143	3890.844		Fe I	280	3901.850		Nd II	
3881.214		Cr I	138	3890.940		Nd II		3902.09	P	Sc II	9
3881.383		Sm II	33	3891.119		V I		3902.108		Cr I	238
3881.399		Ti I	15	3891.210		Sm II	22	3902.250		V I	7
3881.402		W I	2	3891.227		V I	43	3902.398		Gd II	19
3881.84		Gd II	36	3891.25		V II	20	3902.558		V I	43
3881.856		Cr I	138	3891.39		Zr I	11	3902.915		Cr I	23
3881.869		Co I	18	3891.40		A II	2	3902.948		Fe I	45
3881.92		Ni II	13	3891.781		Ba II	4	3902.968		Mo I	1
3881.94		Gd II	50	3891.928		Fe I	733	3903.164		Cr I	23
3881.97		Zr II	134	3891.97		A II	2	3903.27		V II	11
3882.147		Ti I	175	3891.976		Mg I	47	3903.417		Sm II	
3882.197		O II	12	3891.98	P	V II	11	3903.77		Zr II	7
3882.28	P	Ti II	34	3892.118		Co I	130	3903.902		Fe I	429
3882.313		Ti I	176	3892.14		Cr II	167	3904.02		Mg I	19
3882.446		Ce II	87	3892.321		S II	50	3904.340		Ce II	91
3882.45		O II	11	3892.859		V I	7	3904.64	P	Ni I	29
3882.892		Ti I	176	3892.898		Fe I	283	3904.785		Ti I	56
3883.132		Tm I		3892.98		Fe I	567	3904.79		P III	9
3883.15		O II	12	3893.067		Co I	114	3904.790		Co I	171
3883.208		V II	11	3893.14		A II	91	3905.01	P	Fe I	703
3883.282		Fe I	663	3893.316		Fe I	364	3905.18	P	Fe I	564
3883.292		Cr I	23	3893.376		Mg I	47	3905.527		Si I	3
3883.43		V II	20	3893.391		Fe I	430	3905.64		Cr II	167
3883.437		Tm II	5	3893.53		O II	11	3905.66	P	Fe I	153
3883.660		Cr I	138	3893.924		Fe I	175	3905.88	P	Cr II	128
3883.77		Hf II	18	3894.005		Fe I	663	3905.886		Nd II	
3883.80		C III	15	3894.035		Cr I	23	3906.037		Fe II	173
3883.80		Cl II	55	3894.073		Co I	34	3906.287		Co I	17
3884.090		Ti I	175	3894.19		Pd I	8	3906.482		Fe I	4
3884.359		Fe I	282	3894.49		Fe I	566	3906.748		Fe I	664
3884.465		V I	65	3894.627		Nd II	29	3906.748		V I	42,43
3884.601		Co I	32	3894.696		Gd II	1	3906.95		S II	3
3884.66		Fe I	565	3894.976		Co I	18	3906.97	P	Fe I	567
3884.847		V II	33	3895.03		P III	9	3907.10		Eu II	5
3885.07	P	Fe I	732	3895.114		Ce II	210	3907.289		Ce II	253
3885.084		Cr I	138	3895.12		Cr II	143	3907.45		O II	11
3885.09		La II	151	3895.16		Cr II	106	3907.464		Fe I	284
3885.154		Fe I	430	3895.230		Gd II	50	3907.476		Sc I	8
3885.190		Pr II	18	3895.243		Ti I	176	3907.52		V II	178
3885.218		Cr I	23	3895.26		A II	55	3907.65	P	Ti II	97
3885.275		Co I	31	3895.44	P	Fe I	565	3907.778		Cr I	262
3885.286		Sm II	46	3895.59	P	Ti I	164	3907.937		Fe I	280
3885.41		Zr I	7	3895.658		Fe I	4	3908.033		Pr II	11
3885.512		Fe I	124	3895.662		Mg I	47	3908.408		Ce II	65
3885.76	P	Fe I	567	3895.791		Gd II		3908.431		Pr II	11
3885.770		V I	65	3896.11	P	Fe II	23	3908.54	P	Fe II	29
3885.87	P	Ni I	1	3896.155		V I	43	3908.543		Ce II	127
3885.93	P	Fe I	946	3896.155		V II	10	3908.68	P	Fe I	153
3885.95	P	Ti I	164	3896.30		O II	11	3908.755		Cr I	23
3885.99		C III	15	3896.53		Zr I	9	3908.90	P	Fe I	153
3886.284		Fe I	4	3896.63	P	Fe I	834	3908.931		Ni I	117
3886.37		La II	40	3896.804		Ce II	188	3909.25	P	Cr II	129
3886.587		V I	64	3896.804		Y II	86	3909.313		Ce II	133
3886.789		Cr I	23	3896.977		Sm II	5	3909.664		Fe I	565
3886.825		Mo I	8	3897.075		V I	126	3909.830		Fe I	364
3886.94	P	Cr I	86	3897.290		Ti I	175	3909.894		V I	7,63
3887.051		Fe I	20	3897.449		Fe I	429	3909.910		Ba I	8
3887.157		Gd II	3	3897.581		Ti I	176	3909.933		Co I	3
3887.347		Tm I	1	3897.896		Fe I	280	3910.52	P	Fe I	562
3887.365		Ti I	176	3897.92		K II	1	3910.790		V I	42
3887.44		He II	4	3898.012		Fe I	20	3910.81		La II	43
3887.866		Nd II	31	3898.019		V I	126	3910.845		Fe I	284
3887.993		D	1	3898.120		Mg I	47	3911.00	P	Fe I	562
3888.020		Ti I	175	3898.143		V I	63	3911.169		Nd II	
3888.42		Fe I	565	3898.273		Ce II	52	3911.18	P	Fe I	564
3888.517		Fe I	45	3898.278		V I		3911.185		Ti I	175
3888.646		He I	2	3898.292		Cb II	9	3911.32		Cr II	129
3888.825		Fe I	488	3898.485		Co I	58	3911.32		S II	
3889.051		H	2	3898.487		Ti I	13	3911.362		Ti I	176
3889.141		Ca I	42	3899.037		Fe I	175	3911.58		A II	54
3889.18		C III	15	3899.09	P	S III	5	3911.699		Fe I	664
3889.33	P	Fe I	562	3899.140		V II	33	3911.810		Sc I	8
3889.330		Pr II	14	3899.27		S III	12	3911.95		Cr I	
3889.38	P	Fe I	660	3899.668		Ti I	15,175	3911.960		O II	17
3889.65	P	Ni I	180	3899.709		Fe I	4	3912.088		O II	17
3889.671		Ni I	15	3900.175		V I	126	3912.191		Ce II	192
3889.90	P	Cr II	129	3900.226		Nd II		3912.207		V I	42,43
3889.92	P	Fe I	564	3900.51		Zr I	6	3912.310		Ni I	151
3889.929		Nd II		3900.519		Fe I	565	3912.32	P	Ti II	97

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3912.424		Ce II	60	3923.03	P	Fe I	661	3934.14		Zr II	7
3912.589		Ti I	175	3923.109		Ce II	191	3934.228		Ti I	15
3912.886		V I	42	3923.246		Gd II	50	3934.41		N III	8
3912.898		Pr II	17	3923.39	P	Ti II	97	3934.46	P	Ce II	3
3912.979		Ni I	15	3923.48		He II	4	3934.80		Zr II	43
3913.464		Ti II	34	3923.483		S II	55	3934.823		Nd II	
3913.635		Fe I	120	3923.50		Ca I	7	3934.824		Gd II	1
3913.92		Cl II	68	3923.503		Sc II	9	3935.141		V I	90
3914.273		Fe I	567	3923.91		Hf II	18	3935.18	P	Cr II	10
3914.333		V II	33	3923.92		Zr II	100	3935.31		Fe I	362
3914.334		Ti I	15	3924.05		S II	3:	3935.64		Hf II	43
3914.36		Zr II	134	3924.075		Mn I		3935.717		Ba I	8
3914.42	P	Fe I	652	3924.18	P	Ni I	240	3935.764		Sm II	28
3914.480		Fe II	3	3924.44		Si III		3935.77		Al I	18
3914.50	P	Fe I	660	3924.527		Ti I	13	3935.815		Fe I	362
3914.73		Fe I	662	3924.644		Ce II	190	3935.86	P	Fe I	564
3914.751		Ti I	14	3924.65	P	Cr II	129	3935.914		He I	57
3914.76		A II	2	3924.658		V I	90	3935.942		Fe II	173
3914.949		Ce II	78	3925.09		La II	135	3935.964		Co I	32
3914.96		Cr I	137	3925.151		Co I	131	3936	P	C IV	2
3915.30	P	Cr II	128	3925.201		Fe I	567	3936.07		Zr II	42
3915.384		Ir I	6	3925.216		Sm I	2	3936.22		La II	13
3915.503		Co I	113	3925.240		V I	8	3936.282		V I	42
3915.843		Cr I	136	3925.456		Pr II	11	3936.79	P	Fe I	564
3915.879		Ti I	15	3925.55	P	Fe I	660	3936.95		Cr II	128
3915.94		Zr II	17	3925.646		Fe I	364	3937.329		Fe I	278
3916.05		La II	42	3925.71		A II	105	3937.575		Nd II	19
3916.243		Cr I	23	3925.87		Cl III	4	3937.870		Ba I	8
3916.418		V II	10	3925.946		Fe I	364	3938.005		Ti I	246
3916.476		Tm I	2	3926.001		Fe I	562	3938.086		Ce II	205
3916.508		Gd II	20	3926.319		Ti I	292	3938.289		Fe II	3
3916.61	P	Gd II	50	3926.32		V II	165	3938.400		Mg I	18
3916.64		Zr I	6	3926.467		Mn I	44	3938.52		N III	8
3916.70		Cl II	68	3926.497		V II	11	3938.621		Al II	73
3916.733		Fe I	806	3926.530		He I	58	3938.76	P	Ni I	240
3916.980		Cr I	137	3926.58	P	O II	11	3938.856		Co I	171
3917.115		Co I	113	3926.649		Cr I	313	3938.969		Fe II	190
3917.185		Fe I	20	3927.383		Ce II	43	3939.066		Al II	73
3917.29		Eu II	10	3927.61	P	Fe I	282	3939.49		S II	45
3917.442		Sm II	9	3927.922		Fe I	4	3939.51	P	Sc II	9
3917.47		Hf II	76	3927.926		V I	90	3939.85		La II	134
3917.57		Cl II	68	3927.93	P	Fe I	361	3940.044		Fe I	731
3917.596		Cr I	137	3928.085		Fe I	565	3940.32	P	Ti II	97
3918.10		Hf II	7	3928.279		Sm II	17	3940.338		Ce II	50
3918.19		S II	29	3928.615		S III	8	3940.882		Fe I	20
3918.236		Gd II	50	3928.62		A II	10	3940.887		Co I	18
3918.276		Ce II	12,248	3928.636		Cr I	23	3941.15		Cr I	213
3918.319		Fe I	124	3928.87		Eu II	10	3941.283		Fe I	562
3918.418		Fe I	364	3928.97	P	Ti I	175	3941.478		Mo II	4
3918.51	P	Fe II	191	3929.114		Fe I	280	3941.490		Cr I	23
3918.54	P	Cr I	136	3929.15	P	Ti II	97	3941.512		Nd II	27
3918.58	P	Fe I	362	3929.208		Fe I	659	3941.728		Co I	17
3918.644		Fe I	430	3929.22		La II	27	3941.86		Ni I	171
3918.856		Pr II	11	3929.53		Zr I	7	3941.874		Sm II	1
3918.977		C II	4	3929.54		Zr II	142	3941.92		Zr II	55
3919.005		N II	17	3929.583		Tm II	11	3942.006		V I	63
3919.069		Fe I	430	3929.734		V II	10	3942.14		O IV	10
3919.15	P	Cr I	136	3929.875		Ti I	13	3942.151		Ce II	37
3919.159		Cr I	23	3930.023		V I	63	3942.443		Fe I	364
3919.287		O II	17	3930.076		Co I	59	3942.746		Ce II	57
3919.813		Ce II	60	3930.299		Fe I	4	3942.78		N III	8
3919.822		Ti I	130	3930.31	P	Fe II	3	3943.08		Eu II	22
3920.260		Fe I	4	3930.50		Eu II	5	3943.141		Ce II	113
3920.37		S III	8	3930.63	P	O IV	10	3943.21		Cr I	135
3920.487		V I	42	3930.66		Y II	16	3943.239		Sm II	9
3920.524		Pr II	12	3930.88	P	Cr II	129	3943.339		Fe I	72
3920.645		Fe I	153	3931.088		Ce II	49	3943.48	P	V II	11
3920.677		C II	4	3931.122		Fe I	565	3943.664		V I	42
3920.839		Fe I	567	3931.24		A II	2	3943.888		Ce II	234
3920.965		Nd II		3931.340		V I	90	3944.009		Al I	1
3921.02	P	Zr II	42	3931.369		Ce II	61	3944.126		Ni I	151
3921.022		Cr I	23	3931.938		S II	29	3944.25		Cr I	135
3921.27		Fe I	220	3931.97		Al I	18	3944.27		A II	2
3921.423		Ti I	14	3932.007		Ti II	34	3944.748		Fe I	361
3921.54		La II	40	3932.30		S II	30	3944.890		Fe I	430
3921.731		Ce II	195	3932.40		Hf II	28	3945.048		O II	6
3921.80		Zr I	8	3932.53		La II	123	3945.06		S II	33
3921.905		V I	42	3932.55		A II	90	3945.08		Fe III	69
3922.005		Ce II	50	3932.59	P	Fe I	153	3945.10		C II	32
3922.08	P	Fe I	153	3932.629		Fe I	280,652	3945.11		Cr II	142
3922.09	P	Fe I	564	3933.19		A II	53	3945.119		Fe I	280
3922.36		Zr II	143	3933.294		S II	55	3945.21	P	Fe II	3
3922.397		Sm II	38	3933.38		P III	9	3945.27	P	V II	165
3922.431		V I	42	3933.38		Sc I	8	3945.29	P	O IV	10
3922.54		A II	11,53	3933.606		Fe I	488,562	3945.326		Co I	29
3922.63		S II	60	3933.65		Hf II	6	3945.36		Hf II	109
3922.68	P	Fe I	429	3933.664		Ca II	1	3945.495		Cr I	135
3922.72		P III	9	3933.731		Ce II	81	3945.968		Cr I	134
3922.755		Co I	32	3933.918		Co I	17	3946.00		Hf II	115
3922.914		Fe I	4	3934.013		V I	42	3946.10		A II	105

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3946.18	P	Ni I	1	3956.82	P	O IV	10	3968.36		A II	2
3946.21		Y II	24	3956.901		Ce II	176	3968.38	P	Fe I	219
3946.35		C II	31,32	3957.027		Fe I	562	3968.43		He II	3
3946.406		Al II	63	3957.053		Ca I	6	3968.470		Ca II	1
3946.511		Sm II	17	3957.62		Fe I	564	3968.63		C II	37
3946.633		Co I	60	3957.64		P III	9	3968.78		Fe III	120
3946.681		Ce II	255	3957.66	P	Fe II	13	3968.995		D	1
3946.98		S II	45	3957.672		Gd II	19	3969.061		Cr I	38
3947.002		Fe I	561	3957.928		Co I	18	3969.116		Co I	128
3947.10		Fe III	23,69	3958.001		Nd II	25	3969.261		Fe I	43
3947.125		Co I	58	3958.08		Cr I	307	3969.293		Gd II	20
3947.301		O I	3	3958.101		Tm II	1	3969.38		C II	37
3947.393		Fe I	153	3958.206		Ti I	13	3969.38	P	Fe II	3
3947.489		O I	3	3958.24		Zr II	16	3969.40	P	Fe II	3
3947.5043		A I	2	3958.266		Ce II	160	3969.43	P	Fe III	120
3947.533		Fe I	361,426	3958.39		A II	65	3969.628		Fe I	657
3947.594		O I	3	3958.60	P	Ni I	150	3969.748		Cr I	38
3947.60		C II	31	3958.66		Pd I	8	3970.07		Cr I	213
3947.633		Pr II	11	3958.865		Rh I	7	3970.074		H	1
3947.770		Ti I	14	3959.01	P	Sc II	49	3970.10		Ta I	1
3947.838		Sm II	33	3959.436		Gd II	49	3970.15		V II	203
3948.00	P	Fe I	652	3959.46	P	Fe I	556	3970.20		C II	38
3948.105		Fe I	562	3959.523		Gd II	44	3970.391		Fe I	488
3948.113		Sm II	9	3959.527		Sm II		3970.503		Ni I	151
3948.15		C II	32	3960.284		Fe I	913	3970.528		Sm II	1
3948.28	P	Fe I	561	3960.37		V II	189	3970.69		S II	45,54
3948.48	P	Fe I	560	3960.763		Cr I	68	3970.99	P	Fe I	1074
3948.670		Ti I	13	3960.895		Fe II	212	3971.062		Gd II	50
3948.779		Fe I	604	3960.914		Ce II	84	3971.164		Pr II	27
3948.901		Ca I	6	3960.997		Co I	128	3971.255		Cr I	67
3948.9788		A I	2	3961.147		Fe I	361	3971.325		Fe I	277
3949.10		La II	41	3961.503		Mo II	4	3971.397		Sm II	43
3949.14		Fe I	730	3961.523		Al I	1	3971.684		Ce II	133
3949.23	P	Fe I	153	3961.55		S III	8	3971.754		Gd II	49
3949.275		Tm I	2	3961.59		O III	17	3971.82		Fe I	281
3949.438		Pr II	16	3962.03		La II		3971.98		Eu II	5
3949.45		C II	31	3962.12		Ni I	199	3972.130		Ti I	81
3949.64		Cr I	136	3962.19		Cr I	68	3972.164		Pr II	13
3949.954		Fe I	72	3962.353		Fe I	566	3972.171		Ni I	29
3949.96		Cl II	36	3962.42	P	Fe I	560	3972.44		C II	37
3950.35		Y II	6	3962.445		Pr II	28	3972.506		Co I	171
3950.42		S II	45	3962.65	P	Fe I	913	3972.53	P	Co I	173
3950.78	P	Fe I	153	3962.851		Ti I	12	3972.570		Ca I	41
3951.097		Cr I	136	3962.995		Sm II		3972.58		K II	4
3951.154		Nd II	19	3963.04		La II		3972.688		Cr I	67
3951.164		Fe I	661	3963.108		Fe I	562	3972.920		Fe I	803
3951.51		P III	9	3963.114		Nd II	39	3973.144		Co I	58
3951.59		Y II	16	3963.13		O II	43	3973.263		O II	6
3951.717		Co I	171	3963.13		S II	45	3973.269		Nd II	19
3951.765		Cr I	136	3963.354		Ti I	81	3973.562		Ni I	31
3951.968		V II	10	3963.43	P	Fe I	654	3973.642		V II	9
3951.987		O I	30	3963.626		V I		3973.650		Nd II	37
3952.00		Gd II	1	3963.628		Os I	3	3973.655		Fe I	769
3952.08		C II	32	3963.690		Cr I	38	3973.707		Ca I	6
3952.195		Nd II	23	3964.09	P	Fe II	29	3973.84		C II	37
3952.326		Co I	16	3964.11		Fe III		3973.981		Gd II	50
3952.367		Cb II	10	3964.261		Pr II	33	3974.160		Fe II	29
3952.399		Cr I	136	3964.269		Ti I	12	3974.397		Fe I	564
3952.573		Ce II	113,177	3964.35	P	Cr II	10	3974.48		A II	9
3952.606		Fe I	278	3964.522		Fe I	361	3974.65	P	Fe I	526
3952.704		Fe I	362	3964.57	P	Fe II	29	3974.650		Ni I	198
3952.74		A II	89	3964.64	P	Cr II	10	3974.66	P	O IV	10
3952.917		Co I	28	3964.727		He I	5	3974.726		Co I	18
3952.982		O I	30	3964.825		Pr II	8	3974.76		A II	8
3953.056		O I	30	3964.90		Eu II	10	3974.766		Fe I	72
3953.156		Fe I	430	3964.96		Hf II	54	3975.029		Fe II	191
3953.163		Cr I	136	3965.011		Co I	31	3975.21		Fe I	153
3953.50	P	Fe I	770	3965.236		Co I	30	3975.69	P	Ti I	186
3953.516		Pr II	9	3965.263		Pr II	8	3975.85		Fe I	977
3953.525		Nd II		3965.446		Fe I	658	3976.01		Cr I	38
3953.660		Ce II	141	3965.511		Fe I	565	3976.270		Sm II	9
3953.76	P	Fe III	69	3965.83	P	Fe I	122	3976.30		Cr I	280
3953.863		Fe I	362	3966.045		Sm II	24	3976.392		Fe I	487
3954.21		Cl II	82	3966.066		Fe I	45	3976.430		Sm II	33
3954.372		O II	6	3966.37		Pt I	4	3976.564		Fe I	655
3954.38		Fe III	120	3966.43	P	Fe II	3	3976.615		Fe I	729
3954.596		O I	30	3966.532		Fe I	562,652,766	3976.665		Cr I	38
3954.687		O I	30	3966.573		Pr II	8	3976.836		Nd II	21
3954.715		Fe I	606	3966.630		Fe I	282,562	3976.865		Fe I	431,662
3955.22	P	Fe I	527	3966.65		Zr I	8	3976.88		Fe III	69
3955.352		Fe I	562	3966.72		K II	5	3977.10		O IV	10
3955.77	P	Fe I	219	3966.824		Fe I	659	3977.184		Co I	113
3955.82	P	Zr II	17	3967.048		Ce II	84	3977.231		Os I	4
3955.851		N II	6	3967.423		Fe I	604	3977.30		C II	38
3955.956		Fe I	488	3967.441		O II	22	3977.32		Zr I	46
3956.270		Co I	2	3967.69		Y II	82	3977.732		V II	10
3956.284		Ce II	202	3967.964		Fe I	561	3977.743		Fe I	72
3956.336		Ti I	13	3968.11		V II	9	3978.28		P III	8
3956.459		Fe I	604	3968.25		Zr I	7	3978.43		Fe III	120
3956.681		Fe I	278	3968.261		Gd II	3	3978.466		Fe I	361

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3978.650		Ce II	175	3987.98		Yb I	2	3996.607		Sc I	7
3978.650		Co I	17	3988.18		A II	65	3996.79	P	Fe I	1074
3978.677		Cr I	67	3988.51		La II	40	3996.968		Fe I	945
3978.864		Co I	173	3988.68		Zr I	46	3997.054		Pr II	9
3978.87		C II	37	3988.833		V I	89	3997.126		V II	9
3979.08		La II	140	3989.06		Sc II	8	3997.17		P III	9
3979.12	P	Fe I	426	3989.24	P	Fe I	561	3997.394		Fe I	278
3979.200		Sm II	51	3989.29		Zr I	6	3997.43		Y II	24
3979.22		Cr I	307	3989.444		Ce II	240	3997.48	P	Fe I	563
3979.324		Cr I	280	3989.581		Ti I	81	3997.49	P	Fe I	556
3979.36		A II	90	3989.60	P	Fe I	605	3997.764		Gd II	67
3979.40		Hf II	97	3989.718		Pr II	12	3997.901		Co I	32
3979.42		Fe III	120	3989.758		Ti I	12	3997.97		S III	
3979.479		Nd II	57	3989.803		V II	32	3998.00		Si II	
3979.51		Cr II	183	3989.859		Fe I	768	3998.054		Fe I	276
3979.518		Co I	3	3989.958		Mn I	33	3998.46	P	Fe I	606
3979.65		Fe I	561	3989.986		Cr I	268	3998.51		Hf II	59
3979.798		Cr I	67	3990.103		Nd II	19	3998.554		Co I	33
3979.86		S II	59	3990.16		Cr I	280	3998.635		Ti I	12
3980.14		Fe III	120	3990.184		Ti I	186	3998.69		N III	16
3980.35		C II	37	3990.19		Cl II	76	3998.730		V I	89
3980.56		Al III	12	3990.299		Co I	58	3998.79		S II	59
3980.65		Fe I	153	3990.379		Fe I	527	3998.85		Cr I	307
3980.821		Ti I	186	3990.55	P	Fe I	556	3998.98		Zr II	16
3980.895		Ce II	194	3990.566		V I	89	3999.00	P	Cr II	10
3981.106		Fe I	22	3990.81		Fe III	46	3999.07	P	Cr II	10
3981.233		Cr I	67	3990.94		S II	45	3999.195		V II	202
3981.36		La II	139	3991.123		Cr I	38	3999.242		Ce II	57
3981.466		Ti I	188	3991.14		Zr II	30	3999.336		Ti I	188
3981.61	P	Fe II	3	3991.47		V II	10	3999.679		Cr I	
3981.62	P	Fe I	428	3991.50		Cl III	7	3999.92		C III	
3981.761		Ti I	12	3991.528		Co I	173	3999.98		N I	
3981.775		Fe I	278	3991.673		Cr I	38	4000.02		Fe I	360
3981.94		Cl II		3991.684		Co I	17	4000.266		Fe I	556
3981.998		Ti II	11	3991.743		Nd II	19	4000.466		Fe I	426
3982.01		Zr II	142	3991.77		Si II		4000.493		Nd II	64
3982.063		Pr II	28	3991.831		Co I	129	4000.59		Cr I	295
3982.355		Nd II	67	3991.965		V II	202,227	4001.049		Ce II	193
3982.478		Ti I	11	3992.014		Co I	3	4001.17		V II	202
3982.583		Mn I	33	3992.06		A II	2	4001.24		K II	6
3982.59		Y II	6	3992.11		Cr I	38	4001.257		Gd II	49
3982.719		O II	6	3992.114		Ir I	5	4001.444		Cr I	268
3982.901		Ce II	172	3992.386		Ce II	134	4001.56		C III	
3983.008		Gd II	49	3992.395		Fe I	604	4001.666		Fe I	72
3983.138		Sm II	38	3992.64	P	Fe I	219	4002.073		Fe II	29
3983.237		Cr I	213	3992.801		V I	89	4002.466		Ti I	188
3983.35		Fe I	485	3992.845		Cr I	67	4002.48		Cr II	166
3983.7		Al II	32,48	3992.913		Ce II	226	4002.549		Fe II	190
3983.77		S III	8	3993.213		Gd II	1	4002.55		Zr I	46
3983.83	P	Fe I	426	3993.308		Sm II	4	4002.665		Fe I	320,655
3983.907		Cr I	38	3993.401		Ba I	8	4002.940		V II	9
3983.960		Fe I	277	3993.526		S II	29	4002.95		Zr II	142
3984.03		Hf II	19	3993.796		Ti I	186	4003.33		Cr II	194
3984.140		Ni I	171	3993.822		Ce II	12	4003.41		Fe III	15
3984.177		Mn I	33	3993.952		Ni I	170	4003.596		Co I	130
3984.313		Ti I	185	3993.968		Cr I	67	4003.64		N III	16
3984.335		V I	89	3994.00	P	Fe I	560	4003.764		Fe I	728
3984.338		Cr I	38	3994.117		Fe I	526	4003.771		Ce II	188
3984.46	P	Fe I	219	3994.165		Gd II	49	4003.789		Ti I	188
3984.600		V I	89	3994.27	P	Fe I	320	4003.850		Gd II	104
3984.675		Ce II	252	3994.50		La II	78	4003.89		S II	45
3984.76		Zr II	7	3994.542		Co I	17	4003.921		Cr I	268
3984.858		Ru I	9	3994.56	P	Ti I	186	4004.010		Nd II	
3984.93	P	Fe I	561	3994.683		Ti I	188	4004.15	P	Fe II	127
3985.241		Mn I	33	3994.684		Nd II		4004.832		Fe I	601
3985.246		Ti I		3994.81		A II	89,101	4004.976		Fe I	486,557
3985.32	P	Fe I	219	3994.834		Pr II	11	4005.04	P	Fe III	45
3985.393		Fe I	661	3994.996		N II	12	4005.246		Fe I	43
3985.46		O II	22	3995.10		K II	1	4005.38	P	Fe I	123
3985.580		Ti I	188	3995.17		O IV	10	4005.49	P	Fe I	219
3985.74	P	Cr II	10	3995.199		Fe I	604	4005.64	P	Fe III	45
3985.783		V II	202	3995.306		Co I	31	4005.7		Al II	89
3985.96	P	Cr II	10	3995.48	P	Sc II	49	4005.712		V II	32
3985.97		S III	8	3995.49	P	Sc II	16	4005.952		Ti I	187
3986.03	P	Cr II	10	3995.586		Tm II	5	4006.136		Ni I	
3986.176		Fe I	655	3995.656		Ba I	8	4006.16	P	Fe I	564
3986.18	P	Fe I	560	3995.74		La II	27	4006.314		Fe I	603
3986.201		Mo II	4	3995.83	P	Ni I	238	4006.631		Fe I	488
3986.30	P	Fe I	560	3995.860		Al II	47	4006.768		Fe I	320
3986.395		Mn I	33	3995.996		Fe I	279	4007.04	P	Cr II	194
3986.682		Sm II	17	3996.075		Al II	47	4007.195		Ti I	187
3986.7533		Mg I	17	3996.159		Al II	47	4007.233		Fe I	119
3986.826		Mn I	33	3996.182	Forb	Al II	47	4007.277		Fe I	277
3987.090		Ni I	137	3996.26	P	Fe I	561	4007.36		Hf II	88
3987.098		Mn I	33	3996.28	P	Fe I	427	4007.435		Nd II	
3987.117		Co I	16	3996.320		Gd II		4007.589		Ce II	221
3987.214		Gd II	19	3996.323		Al II	47	4007.64		La II	
3987.428		Sm II	28	3996.36	P	Fe II	190	4007.66		A II	65
3987.464		Mn I	33	3996.381		Al II	47	4007.72	P	Fe II	189
3987.63	P	Ti II	11	3996.518		Tm II		4007.78		S II	29

I A	Type	Element	Multiplet No.
4007.81	P Forb	He I	56
4008.046		Ti I	187
4008.17		V II	32
4008.41	P	Sc II	16
4008.46		Hf II	54
4008.60	P	Sc II	16
4008.714		Pr II	28
4008.769		W I	6
4008.81		Fe III	
4008.913		Gd II	
4008.926		Ti I	12
4009.270		He I	55
4009.39		S II	55
4009.54	P	Fe I	556
4009.58		Al II	37
4009.653		Ti I	11
4009.714		Fe I	72
4009.90		C II	27
4009.984		Ni I	150
4010.18		Fe I	915
4010.77		Fe I	219,320
4011.089		Co I	2
4011.23		A II	53
4011.416		Fe I	218
4011.534		Ti I	10
4011.69		Eu II	22
4011.71		Fe I	153
4011.89	P	Fe I	424
4012.10		K II	2
4012.16		Fe I	601
4012.250		Nd II	10
4012.372		Ti II	11
4012.389		Ce II	206
4012.467		Fe II	126
4012.49		Cr I	268
4012.50		Cr II	183
4012.51		Mo I	12
4012.704		Nd II	
4012.786		Ti I	186
4013.24	P	Ti I	186
4013.587		Ti I	187
4013.641		Fe I	557
4013.798		Fe I	485
4013.798		Gd II	
4013.80		Mg II	22
4013.822		Fe I	486
4013.87		A II	2
4013.89	P	Fe I	120
4013.942		Co I	58
4013.953		Gd II	17
4014.28		Fe I	426,427
4014.489		Sc II	8
4014.534		Fe I	802
4014.668		Cr I	268
4014.899		Ce II	157
4015.20	P	Fe II	142
4015.377		Ti I	185
4015.389		Pr II	32
4015.50		Ni II	12
4015.877		Ce II	256
4016.264		Ti I	186
4016.432		Fe I	560
4016.54		Fe I	277
4016.81	P	Fe I	428
4016.82		V II	202
4016.943		Ti I	208
4017.096		Fe I	279
4017.156		Fe I	527
4017.27		C II	27
4017.29		V II	216
4017.56		Ni I	171
4017.58		Eu II	10
4017.596		Ce II	163
4017.771		Ti I	185
4017.96		Cr II	166
4018.102		Mn I	5
4018.282		Fe I	560
4018.38		Zr II	54
4018.49	P	Fe II	13
4018.50		Cl III	7
4018.826		Nd II	19
4019.05		Fe I	219
4019.05		V II	201
4019.055		Ni I	72
4019.137		Th II	3
4019.288		Co I	16
4019.30	P	Co I	18
4019.45		P II	30
4019.982		Sm II	16
4020.05	P	Fe I	556
4020.06		Cl II	76
4020.25		Hf II	40
4020.399		Sc I	7
4020.490		Fe I	913
4020.872		Nd II	19
4020.898		Co I	16
4021.13		C II	27
4021.330		Nd II	36
4021.622		Fe I	120,557
4021.75	P	Fe III	45
4021.812		Ti I	185
4021.869		Fe I	278
4021.925		V I	96
4022.052		Ni I	238,241
4022.263		Cr I	268
4022.333		Gd II	
4022.36		Cr II	183
4022.36		Fe III	45
4022.45		Fe I	173
4022.744		Fe I	556.654
4023.002		Nd II	
4023.231		Sm II	4
4023.388		V II	32
4023.399		Co I	59
4023.58		La II	79
4023.688		Sc I	7
4023.739		Cr I	268
4023.986		He I	54
4023.99		Ni I	170
4023.99		Zr I	46
4024.04		O II	99
4024.109		Fe I	277
4024.45		Zr II	54
4024.491		Ce II	49
4024.552		Fe II	127
4024.573		Ti I	12
4024.727		F II	2
4024.735		Fe I	560
4024.785		Nd II	24
4024.92		Zr I	46
4025.010		F II	2
4025.012		Cr I	37
4025.07		Fe III	53
4025.07	P	Ti I	208
4025.114		Ni I	240
4025.136		Ti II	11
4025.44		Cr I	37
4025.44		Ni I	117
4025.49	P Forb	He I	19
4025.495		F II	2
4025.60		He II	3
4025.67	P	Fe III	45
4025.87		La II	42
4026.080		N II	40
4026.166		Cr I	37
4026.189		He I	18
4026.362		He I	18
4026.40		O II	51
4026.435		Mn I	
4026.5		Al II	24
4026.539		Ti I	185
4027.032		Co I	3
4027.103		Cr I	37
4027.20		Zr I	46
4027.30		V II	201
4027.426		Ti I	
4028.332		Ti II	87
4028.411		Ce II	47
4028.791		S II	45
4029.16		Hf II	23
4029.32	P	Ni I	170
4029.64	P	Ti II	87
4029.640		Fe I	556,563
4029.68		Zr II	41
4030.03		Zr I	46
4030.194		Fe I	72
4030.28	P	Cr II	19
4030.470		Nd II	32
4030.499		Fe I	560
4030.512		Ti I	185
4030.755		Mn I	2
4030.867		Al II	72
4030.90	P	Fe I	943
4031.130		Cr I	268
4031.135		Al II	72
4031.210		Al II	72
4031.243		Fe I	486
4031.339		Ce II	108
4031.35		Zr II	42
4031.41		A II	65
4031.456		Fe II	151
4031.633		Al II	72
4031.68		La II	40
4031.73	P	Fe I	427
4031.753		Ti I	185
4031.807		Nd II	
4031.968		Fe I	655
4032.46		Fe I	320
4032.628		Ti I	297
4032.636		Fe I	44
4032.812		S II	59
4032.946		Fe II	126
4032.975		Ga I	1
4033.073		Mn I	2
4033.18		O II	50
4033.19	P	Fe I	218
4033.263		Cr I	36
4033.55		Sb I	1
4033.68		P II	17
4033.83		A II	52
4033.857		Pr II	19
4033.883		Ti I	208
4033.95		Cr I	36
4034.012		Nd II	23
4034.10		Zr II	42
4034.490		Mn I	2
4034.84		Zr II	70
4034.884		Ti I	208
4035.087		N II	39
4035.09		O II	51
4035.110		Sm II	33
4035.25	P	Fe I	831
4035.47		A II	33
4035.54	P	Fe II	22
4035.54		Fe III	119
4035.542		Co I	173
4035.631		V II	32
4035.728		Mn I	5
4035.82	P	Fe III	45
4035.828		Ti I	208
4035.96	P	Ni I	150
4035.98	P	Fe I	426
4036.23		P II	16
4036.37	P	Fe I	279
4036.53		Cl II	76
4036.59		La II	59
4036.779		V II	9
4036.80		Cr I	36
4037.294		Cr I	36
4037.332		Gd II	49
4037.665		Ce II	218
4037.725		Fe I	118
4037.897		Gd II	49
4038.03		Cr II	194
4038.124		Nd II	31
4038.27	P	Ni I	150
4038.545		V II	155
4038.622		Fe I	600,728
4038.82		A II	2
4039.100		Cr I	251
4039.12		Fe III	45
4039.30		Cr I	251
4039.302		Al II	62
4039.357		Pr II	15
4039.397		Al II	62
4039.574		V II	32
4039.83		Y I	5
4039.94		Fe I	276
4040.24		Zr II	54
4040.310		Ti I	185
4040.650		Fe I	655
4040.762		Ce II	138
4040.796		Nd II	30
4041.288		Fe I	603,654
4041.31		O II	50
4041.321		N II	39
4041.361		Mn I	5
4041.64	P	Fe II	172
4041.675		Sm II	22
4041.79		Cr I	36
4041.84	P	Fe II	13
4041.911		Fe I	602
4042.135		Ce II	252
4042.20		A II	28
4042.246		Cr I	36
4042.584		Ce II	140
4042.635		V I	96
4042.723		Sm II	4
4042.75	P	Fe I	556
4042.905		Sm II	9

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4042.91		A II	33	4053.28		Fe III	119	4062.90		O II	50
4042.91		La II	66	4053.294		Gd II		4063.174		Co I	18
4043.502		Cu II	3	4053.45		Cr II	19	4063.286		Fe I	698
4043.537		N II	39	4053.506		Ce II	36	4063.390		Gd II	
4043.57		Zr I	32	4053.56		A II	53	4063.528		Mn I	5
4043.596		Nd II	34	4053.59		Fe III	98	4063.59		Gd II	48
4043.69	P	Fe I	122	4053.59		V II	215	4063.597		Fe I	43
4043.696		Cr I	306	4053.642		Gd I	5	4063.931		V I	121
4043.775		Ti I	208	4053.814		Ti II	87	4063.94	P	Cr II	19
4043.901		Fe I	276,557	4053.82		Fe I	485	4064.07	P	Fe I	423
4043.98	P	Fe I	559	4054.10		O II	50,98	4064.16		Zr I	46
4044.01	P	Fe II	172	4054.11		Cr II	19	4064.2		C I	7
4044.145		K I	3	4054.18		Fe I	557	4064.203		Ti I	80
4044.4182		A I	4	4054.55		O II	98	4064.22	P	Ti I	254
4044.49	P	Fe I	1073	4054.555		Sc I	6	4064.350		Ti II	106
4044.49		P II	30	4054.618		Co I	2	4064.374		Ni I	179
4044.57		Zr I	46	4054.833		Fe I	698	4064.45		S III	
4044.614		Fe I	359	4054.845		Pr II	30	4064.46		Fe I	44
4044.64	P	Fe I	484	4054.883		Fe I	698	4064.576		Sm II	24,33
4044.75		N II	39	4054.991		Ce II	82	4064.64		P II	16
4044.818		Pr II	8	4055.011		Ti I	80	4064.75	P	Fe II	39
4044.96		O II	51	4055.03		Zr I	46	4064.99		Y II	24
4045.133		Mn I	48	4055.046		Fe I	218	4065.070		V II	215
4045.139		Fe I	125	4055.214		Mn I	48	4065.09		Au I	3
4045.148		Gd II	49	4055.543		Mn I	5	4065.094		Ti I	80
4045.16	P Forb	He I	17	4055.98		Fe I	914	4065.1		C I	7
4045.206		Mn I		4056.027		Mo I	12	4065.14		A II	65
4045.386		Co I	31	4056.06		C III	24	4065.402		Fe I	698
4045.59	P	Fe I	559	4056.07		Cr II	182	4065.595		Ti I	207
4045.63		Zr II	30	4056.212		Ti II	11	4065.716		Cr I	279
4045.815		Fe I	43	4056.270		V II	14	4066.02	P	Fe I	695
4046.07	P	Fe I	557	4056.53		Fe I	320	4066.16	P	Cr II	182
4046.15		O II	50	4056.543		Pr II	26	4066.328		Fe II	214
4046.19		Cr I	36	4056.793		Cr I	306	4066.365		Co I	30
4046.269		V II	177	4056.8		Al II	88	4066.597		Fe I	424
4046.341		Ce II	81	4057.00		N II	39	4066.737		Sm II	28
4046.46	P	Fe I	1075	4057.074		V I	121	4066.938		Cr I	66
4046.557		Hg I	1	4057.19		Cr I	156	4066.979		Fe I	358
4046.629		Fe I	487	4057.195		Co I	3	4067.03		V II	9
4046.760		Cr I	36	4057.347		Ni I	89	4067.05	P	Cr II	193
4046.81	P	Fe II	126	4057.356		Fe I	277	4067.051		Ni II	11
4047.160		Sm II	16	4057.39		P III	1	4067.275		Fe I	217
4047.214		K I	3	4057.457		Fe II	212	4067.279		Ce II	22
4047.315		Fe I	117,853	4057.5052		Mg I	16	4067.39		La II	26
4047.51		A II	66	4057.51		Fe III	33	4067.49	P	Fe I	422
4047.64		Y I	6	4057.612		Ti I	254	4067.60	P	Fe I	655
4047.792		Sc I	7	4057.66	P	Fe I	729	4067.85	P	Fe I	1103
4047.88	P	Y II	6	4057.72		A II	9	4067.87		C III	16
4047.948		W I	4	4057.80		N IV	3	4067.984		Fe I	559
4047.96		Hf II	104	4057.81		Cr I	251	4068.003		Mn I	5
4048.02	P	Cr II	182	4057.812		Pb I	1	4068.144		Ti I	207
4048.22		O II	50	4057.950		Mn I	29	4068.334		Sm II	42
4048.56	P	Cr I	251	4058.08		La II	54	4068.541		Co I	58
4048.68		Zr II	43	4058.139		Ti I	254	4068.661		Ti I	254
4048.755		Mn I	5	4058.183		Co I	16	4068.7		Sc III	
4048.780		Cr I	251	4058.219		Gd I	5	4068.836		Ce II	82
4048.831		Fe II	172	4058.227		Fe I	558	4068.97		C III	16
4048.999		Mn I	48	4058.46	P	Fe I	914	4068.981		Ti I	299
4049.03		V II	215	4058.600		Co I	58	4069.08		Fe I	557
4049.14		Cr II	193	4058.7		S II	54	4069.267		Nd II	20
4049.336		Fe I	218	4058.766		Fe I	120	4069.636		O II	10
4049.369		Ti I	185	4058.77		S II	52	4069.883		Fe II	188
4049.429		Gd II	50	4058.772		Cr I	251	4069.897		O II	10
4049.44		Hf II	53	4058.912		Ca I	40	4070.03	P	Fe II	22
4049.71	P	Ni I	169	4058.930		Mn I	5	4070.094		Ce II	
4049.783		Cr I	251	4058.933		Cb I	1	4070.279		Mn I	5
4049.858		Gd II		4059.07		Cl III	7	4070.288		Gd II	49
4050.02		Cr I	36	4059.27		P III	1	4070.30		C III	16
4050.08		La II	85	4059.321		Co I	2	4070.390		Gd II	17
4050.11		S II	45	4059.370		Gd II	118	4070.45	P	Fe I	525
4050.32		Zr II	43	4059.392		Mn I	29	4070.766		Fe I	558
4050.67		Hf II	59	4059.726		Fe I	767	4070.90		Cr II	193
4050.963		V I	121	4059.961		Nd II	63	4071.0	P	Ni II	11
4051.06		V II	32	4060.09	P	Ti I	254	4071.000		Cr I	306
4051.08		Fe II	98	4060.263		Ti I	80	4071.09		Zr II	54
4051.14b		Nd II	66	4060.58		O II	97	4071.20		O II	49
4051.18	P	Ni I	239	4060.62		Cr I	156	4071.211		Ti I	254
4051.21	P	Fe II	172	4060.98		O II	97	4071.22		Hf II	74
4051.34		V II	215	4061.085		Nd II	10	4071.469		Ti I	254
4051.352		V I	121	4061.3		Sc III		4071.52		Fe I	218
4051.923		Fe I	700	4061.742		Mn I	29	4071.541		V I	96
4051.97		Cr II	19	4061.77	P	Cr II	19	4071.740		Fe I	43
4052.22		Cl II	61	4061.787		Fe II	189	4071.814		Ce II	81
4052.312		Fe I	700,852	4062.08		P II	17	4072.01		A II	33
4052.466		Fe I	563	4062.09		Mo I	12	4072.13		P II	16
4052.472		Mn I	48	4062.223		Ce II	34	4072.164		O II	10
4052.664		Fe I	524	4062.446		Fe I	359	4072.40		A II	41,52
4052.72	P	Fe I	557	4062.590		Gd II		4072.518		Fe I	698
4052.930		Ti I	208	4062.817		Pr II	26	4072.56		Cr II	26
4052.94		A II	101	4062.90		Ne II	53	4072.71		Zr I	46

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4072.913		Ni I	197	4082.40		A II	8	4095.975		Fe I	217
4072.917		Ce II	109	4082.44		Fe I	906	4096.118		Fe I	911
4073.195		Gd II	34	4082.456		Ti I	80	4096.18		O II	48
4073.055		N II	38	4082.593		Co I	16	4096.21	P	Fe I	18
4073.477		Ce II	4	4082.600		Sm II	54	4096.47		A II	65
4073.759		Gd II	44	4082.85		N II	38	4096.543		O II	21
4073.760		Fe I	558	4082.944		Mn I	5	4096.63		Zr II	15
4073.90		O III	23	4083.233		Ce II	60	4096.822		Pr II	29
4074.356		Ti I	254	4083.554		Fe I	117	4096.96	P	Fe I	173
4074.374		W I	6	4083.584		Sm II	24	4097.02	P	Fe I	700
4074.53		C II	36	4083.628		Mn I	5	4097.099		Fe I	558
4074.70	P	Fe I	912	4083.67	P	Mn II	2	4097.12		Ca II	17
4074.794		Fe I	524	4083.71	P	Fe I	1103	4097.15		A II	100
4074.89		C II	36	4083.71		Y I	6	4097.21		Hf II	17
4074.897		Ni I	28	4083.780		Fe I	697	4097.260		O II	20,48
4075.116		Nd II	62	4083.907		O II	49	4097.31		N III	1
4075.272		Nd II	19	4084.17	P	Fe I	557	4097.65		Cr I	97
4075.45		Si II		4084.391		Mo I	12	4097.791		Ru I	9
4075.63	P	Cr II	19	4084.498		Fe I	698	4097.96		Cr I	97
4075.66		V II	14	4084.58	P	Fe II	151	4098.18		Cr I	97
4075.714		Ce II	57	4084.66		O II	21	4098.183		Fe I	558
4075.845		Sm II	51	4085.011		Fe I	358	4098.27		O II	46
4075.853		Ce II	206	4085.124		O II	10	4098.44		Cr II	165
4075.868		O II	10	4085.232		Ce II	172	4098.533		Ca I	25
4075.92		Cr I	66	4085.26	P	Fe I	276	4098.54		Fe III	101
4075.95	P	Fe II	21	4085.312		Fe I	559	4098.606		Gd II	49
4076.00		C II	36	4085.38		Eu II	10	4098.73		La II	138
4076.061		Cr I	279	4085.38	P	Fe I	486	4098.77		Ne II	53
4076.124		Co I	16	4085.564		Gd II	50	4098.900		Gd II	49
4076.232		Fe I	486	4085.67		V II	214	4098.981		Ce II	91
4076.370		Ti I	9	4085.68		Zr II	54	4099.016		Cr I	108
4076.498		Fe I	218	4085.815		Nd II	16	4099.08		Fe I	600,651
4076.636		Fe I	558	4085.98		Fe I	1073	4099.166		Ti I	207
4076.64		A II	52	4086.14		Cr II	26	4099.25		S III	11
4076.71		La II	11	4086.300		Co I	58	4099.44		S III	
4076.78		Si II		4086.69		Ne II	54	4099.47		A II	79
4076.810		Fe I	557	4086.72		La II	10	4099.54		La II	78
4076.83		N II	38	4087.099		Fe I	694	4099.77		Mg I	46
4076.87		Cr II	19	4087.16		O II	48	4099.796		V I	27
4076.89	P	Fe I	559	4087.27	P	Fe II	28	4099.94		N I	10
4076.96		A II	64	4087.297		Ce II	59	4099.99	P	Fe I	698
4077.05		Zr II	54	4087.35		N II	37	4100.04		He II	3
4077.089		Cr I	66	4087.60		Na II	4	4100.17		Fe I	
4077.148		Ti I	207	4087.63		Cr II	19	4100.240		Nd II	57
4077.35		La II	41	4087.79	P	Fe I	832	4100.30		Ne II	54
4077.38		Y I	7	4088.291		Co I	2	4100.35		Fe I	320
4077.470		Ce II	60	4088.567		Fe I	906	4100.35	P	Fe I	1103
4077.50		Cr II	19	4088.75	P	Fe II	39	4100.52		Fe III	107
4077.677		Cr I	279	4088.863		Si IV	1	4100.621		D	1
4077.714		Sr II	1	4088.90		Cr II	19	4100.745		Fe I	18
4078.321		Ce II	19	4089.225		Fe I	422	4100.746		Pr II	4
4078.365		Fe I	217	4089.295		O II	48	4100.91	P	Fe I	173
4078.444		Gd II	15	4089.49		Cr II	164	4100.918		Cb I	1
4078.471		Ti I	80	4089.63		Cr I	260	4101.00		V II	176
4078.700		Gd I	5	4090.085		Fe I	700	4101.163		Cr I	108
4078.862		O II	10	4090.305		Cr I	66	4101.272		Fe I	698
4079.18	P	Fe I	700	4090.34	P	Fe I	44	4101.684		Fe I	120
4079.241		Mn I	5	4090.52		Zr II	29	4101.737		H	1
4079.422		Mn I	5	4090.579		V I	41	4101.764		In I	1
4079.60		A II	33	4090.75	P	Fe I	943	4101.772		Ce II	5
4079.708		Ti I	207	4090.947		Ce II	174	4102.158		Mo I	12
4079.726		Cb I	1	4090.984		Fe I	695	4102.159		V I	41
4079.848		Fe I	359	4091.53		P II	17	4102.38		Y I	7
4079.88		Cl II	61	4091.561		Fe I	357	4102.713		W I	2
4080.04		P III	1	4091.945		V I	52	4102.74	P	Ni I	255
4080.08	P	Fe I	944	4092.174		Cr I	180	4102.926		Si I	2
4080.221		Cr I	66	4092.266		Sm II	1	4103.017		O II	20
4080.226		Fe I	558	4092.386		Co I	29	4103.085		F II	4
4080.227		Nd II	18	4092.407		V I	52	4103.37		N III	1
4080.435		Ce II	36	4092.512		Fe I	18	4103.525		F II	4
4080.44		Hf II	6	4092.633		Ca I	25	4103.61	P	Fe I	831
4080.44		V II	214	4092.694		V I	27	4103.62	P	Fe I	650
4080.48		Ne II	53	4092.848		Co I	59	4103.724		F II	4
4080.56		Cr I	156	4092.940		O II	10	4103.85		Cr I	180
4080.600		Ru I	7	4093.06		Cr I	260	4103.871		F II	4
4080.67		A II		4093.16		Hf II	6	4103.91		A II	52,64
4080.886		Fe I	557	4093.497		V I	52	4104.132		Fe I	356,558
4081.018		Pr II	14	4093.62	P	Ni I	1	4104.18	P	Fe II	39
4081.10		O III	23	4093.90		Mg II	29	4104.23		Cl III	7
4081.19		Fe III	119	4093.955		Ce II	160	4104.46	P	Fe I	422
4081.21		Cr II	165	4094.18		O II	10	4104.743		O II	20
4081.22		Zr I	46	4094.188		Tm I		4104.77	P	Fe I	320
4081.222		Ce II	4	4094.478		Gd II	48	4104.778		V I	112
4081.42	P	Fe II	188	4094.930		Ca I	25	4104.867		Cr I	108
4081.737		Cr I	66	4095.17		S III		4104.97		Fe I	694
4081.74		Ca III	4	4095.27	P	Fe I	1075	4104.996		Ce II	156
4082.125		Fe I	698	4095.486		V I	41	4105.000		O II	20
4082.280		N II	38	4095.63	P	Fe I	851	4105.06	P	Fe I	700
4082.30		Cr II	165	4095.63		O II	48	4105.167		V I	27
4082.396		Sc I	6	4095.92	P	N II	38	4105.365		Mn I	47

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4105.843		Tm I		4115.376		Gd II	117	4124.072		V I	52
4106.03		O II	10	4115.89	P	Fe I	910	4124.081		N II	65
4106.05		Cr I	180	4115.982		Ni I	255	4124.09		A II	41
4106.134		Ce II	160	4116.104		Si IV	1	4124.73		Lu I	3
4106.266		Fe I	217	4116.39		A II	124	4124.793		Fe II	22
4106.437		Fe I	697	4116.470		V I	27	4124.91		Y II	14
4106.582		Nd II	57	4116.547		F II	5	4125.10		Hf II	94
4106.71		Cr I	260	4116.60	P	V I	27	4125.23	P	Fe I	173
4106.83		Cl III	7	4116.66		Cr II	181	4125.4		S III	11
4106.881		Ce II	139	4116.703		V I	27	4125.622		Fe I	1103
4107.07		O II	47	4116.97		Fe I	558	4125.776		Ce II	126
4107.387		Sm II	50	4117.013		Ce II	35	4125.884		Fe I	354
4107.426		Ce II	138	4117.09		P II	17	4126.099		Cr I	65
4107.477		Mo I	12	4117.288		Ce II	77	4126.192		Fe I	695
4107.487		V I	52	4117.32		Fe I	484	4126.521		Cr I	35
4107.492		Fe I	354	4117.71		Fe I	833	4126.88		Fe I	354
4107.75	P	Fe I	831	4117.872		Fe I	700,1103	4126.925		Cr I	
4108.13	P	Fe I	559	4118.10		Ne II	54	4127.08		Cr II	181
4108.31	P	Fe I	833	4118.144		Ce II	11	4127.09		A II	41
4108.39		Zr I	32	4118.182		V I	112	4127.09	P	Ti I	114
4108.400		Cr I	65	4118.45	P	Cr I	85	4127.302		Cr I	35
4108.401		Gd II	117	4118.481		Pr II	8	4127.367		Ce II	4
4108.488		Co I	2	4118.549		Fe I	801	4127.49		P II	16
4108.554		Ca I	39	4118.551		Sm II	54	4127.531		Ti I	296
4108.75		O II	48	4118.643		V I	41	4127.54		S III	
4109.070		Fe I	558	4118.774		Co I	28	4127.57		Y II	15
4109.073		Nd II	17	4118.904		Fe I	559	4127.612		Fe I	357
4109.173		F II	5	4119.015		Ce II	89	4127.643		Cr I	65
4109.19		P II	30	4119.219		F II	5	4127.721		Gd II	117
4109.405		Sm II	28	4119.221		O II	20	4127.80		Hf II	41
4109.455		Nd II	10	4119.44		Cr I	65	4127.807		Fe I	558,727
4109.54		Mg II	21	4119.457		V I	41	4128.053		Si II	3
4109.584		Cr I	65	4119.53	P	Fe II	21	4128.067		Ce II	136
4109.706		Co I	1	4119.66	P	Fe I	320	4128.071		V I	27
4109.786		V I	27	4119.784		Ce II	22	4128.14		Mn II	2
4109.808		Fe I	357	4119.877		Ce II	83	4128.31		Y I	5
4109.81	P	V I	41	4120	P	O V	4	4128.65		A II	
4109.83		Ca II	17	4120.037		Ti I	253	4128.735		Fe II	27
4109.95		Fe III		4120.211		Fe I	423	4128.858		V I	112
4109.98		Cr I	260	4120.279		O II	20	4128.87	P	Mn II	2
4109.98		N I	10	4120.538		V I	41	4128.870		Rh I	8
4110.00		N II	44	4120.554		O II	20	4129.166		Ti I	
4110.05		Zr II	30	4120.613		Cr I	65	4129.176		Ce II	227
4110.20		O II	37	4120.654		Nd II	57	4129.21		Cr I	97
4110.33		Ca II	17	4120.78		P II	17	4129.22		Fe I	698
4110.381		Ce II	28	4120.812		He I	16	4129.231		Sm II	24
4110.472		Nd II	15	4120.829		Ce II	112	4129.34		O II	19
4110.532		Co I	29	4120.97		Fe III	118	4129.46	P	Fe I	695
4110.795		O II	20	4120.993		He I	16	4129.70		A II	77
4110.87		Cr I	97	4121.0		S II	2	4129.73		Eu II	1
4110.903		Mn I	37,47	4121.31		Fe III		4129.96	P	Cr I	97
4111.01		Cr II	18,26	4121.318		Co I	28	4130.035		Fe I	44,486
4111.06	P	Fe I	689	4121.45		Zr I	32	4130.372		Gd II	19,49
4111.36		Cr I	97	4121.48		O II	19	4130.47	P	Cr I	97
4111.394		Ce II		4121.637		Ti I		4130.538		Co I	16
4111.438		Gd II		4121.682		Rh I	9	4130.648		Ba II	4
4111.56		S III		4121.7	P	O V	11	4130.706		Ce II	209
4111.67		Cr I	97	4121.806		Fe I	356	4130.77		P II	17
4111.785		V I	27	4121.817		Cr I	108	4130.86		Cl II	60
4111.902		Fe II	188	4121.95		B II	2	4130.884		Si II	3
4112.018		Os I	5	4122.00	P	Fe I	765	4131.099		Ce II	112
4112.029		O II	21	4122.05		C III	17	4131.17	P	Fe II	188
4112.04		Eu II	10	4122.06		Fe III	118	4131.244		Ti I	253
4112.09	P	Fe I	766	4122.143		Ti I	296	4131.31		Zr II	54
4112.17	P	Fe I	275	4122.162		Cr I	65	4131.360		Cr I	261
4112.35		Fe I	695	4122.522		Fe I	356	4131.430		Mn I	37
4112.59		Cr II	18	4122.638		Fe II	28	4131.73		A II	32
4112.708		Ti I	9	4122.757		Mn I	47	4131.74		La II	167
4112.83		A II	8	4122.98		Fe III	118	4131.75	P	Fe I	1075
4112.972		Fe I	1103	4123	P	O V	4	4131.94	P	Fe I	695
4113.210		Zn I	9	4123.069		Na II	19	4131.97	P	Fe I	558
4113.23		Fe III		4123.188		V I	112	4132.017		V I	27
4113.24		Cr II	18	4123.23		La II	41	4132.060		Fe I	43
4113.28		La II	166	4123.230		Ce II	162	4132.155		Co I	30
4113.45		Fe III		4123.279		Mn I	47	4132.275		Gd II	49
4113.518		V I	52	4123.287		Ti I	302	4132.41		Cr II	26
4113.58		Hf II	24	4123.38		Zr II	54	4132.48		Cl II	29
4113.726		Ce II	137	4123.387		Cr I	108	4132.50		La II	150
4113.82		O II	37	4123.488		Ce II	22	4132.54	P	Fe I	1103
4113.826		Nd II	25	4123.54		Hf II	95	4132.806		O II	19
4113.876		Mn I	47	4123.543		Mn I	37	4132.903		Fe I	357
4113.902		Sm II	16	4123.559		Ti I	296	4132.94	P	Fe I	44
4114.00		N I	10	4123.566		V I	27	4133.006		Sc I	20
4114.449		Fe I	357	4123.748		Fe I	217,422	4133.33		La II	
4114.52		A II	124	4123.812		Cb I	1	4133.361		Nd II	19
4114.95		Na II	20	4123.872		Ce II	60	4133.65		Ne II	53
4114.957		Fe I	695	4123.881		Nd II	65	4133.66		Cl II	60
4114.99		K II	2	4123.90		O V	4	4133.669		N II	65
4115.185		V I	27	4123.956		Sm II	46	4133.800		Ce II	4
4115.374		Ce II	22	4124.00		Cl II	60	4133.869		Fe I	698

I A	Type	Element	Multiplet No.
4134.19	P	Fe I	217
4134.343		Fe I	3
4134.433		Fe I	482.697
4134.488		V I	27
4134.681		Fe I	357
4134.72		K II	1
4135.325		Nd II	
4135.443		Ce II	188
4135.68		Zr I	50
4135.77	P	Cr II	163
4135.77		Fe I	1073
4135.784		Os I	3
4135.9	P	O V	11
4136.386		V I	26
4136.512		Fe I	694
4136.894		Ti I	221
4137.002		Fe I	726
4137.090		Cb I	1
4137.104		Gd II	
4137.257		Mn I	37
4137.284		Ti I	253
4137.42	P	Fe I	1103
4137.63		N I	6
4137.646		Ce II	2
4137.93		Fe III	118
4137.97	P	Fe I	320
4138.21	P	Fe II	150
4138.40	P	Fe II	39
4138.52		Ni I	237
4138.84		Fe I	117
4139.37		Fe III	118
4139.452		Co I	94
4139.48		Ti I	221
4139.702		Cb I	1
4139.933		Fe I	18
4140.24	P	Fe I	418
4140.304		Sc I	20
4140.42	P	Ti I	221
4140.441		Fe I	694,695
4140.450		Gd II	48
4140.51		Fe III	118
4140.74		O II	19
4141.017		Gd II	117
4141.25	Forb	Al III	17
4141.257		Pr II	10
4141.352		Fe I	480
4141.73		La II	40
4141.84		Hf II	87
4141.862		Fe I	422
4141.96		O II	106
4142.08		O II	106
4142.15		Al III	16
4142.184		Ni I	212
4142.193		Cr I	305
4142.24		O II	106
4142.291		S II	44
4142.320		Ni I	
4142.398		Ce II	10
4142.47		Cr I	179
4142.480		Ti I	296
4142.628		Fe I	1103
4142.66		V I	26
4142.86		Y I	5
4142.90		V II	226
4143.048		Ti I	253
4143.07	P	Fe II	188
4143.136		Pr II	4
4143.280		Ti I	253
4143.418		Fe I	523
4143.42	P	N I	6
4143.50	P	Fe I	697
4143.52		O II	106
4143.759		He I	53
4143.77		La II	54
4143.77		O II	106
4143.83	P	Fe I	354
4143.87		Fe III	
4143.871		Fe I	43
4144.164		Ru I	7
4144.492		Ce II	3
4144.553		Nd II	61
4144.995		Ce II	9
4145.100		S II	44
4145.209		Fe I	274
4145.74		Fe III	
4145.764		N II	65
4145.77		Cr II	162
4145.90		O II	106
4146.071		Fe I	422
4146.09		O II	106
4146.20		Cr I	260
4146.234		Ce II	203
4146.47		Cr I	108
4146.695		Cr I	107
4146.94		S II	65
4147.09		Cl II	60
4147.26	P	Fe II	141
4147.34	P	Fe I	693
4147.43		A II	9
4147.49	P	Fe I	832
4147.532		Mn I	37
4147.673		Fe I	42
4148.27	P	Fe I	832
4148.52		Cr I	241
4148.75	P	Ni I	89
4148.859		V I	26
4148.901		Ce II	28
4148.91		S III	
4149.19		K II	6
4149.22		Zr II	41
4149.372		Fe I	694
4149.445		Ti I	296
4149.45		Cr I	261
4149.49	P	Fe I	942
4149.76	P	Fe I	3
4149.831		Sm II	8
4149.897		Al III	5
4149.917		Al III	5
4149.936		Ce II	158,189
4150.08	P	V II	37
4150.138		Al III	5
4150.258		Fe I	695
4150.366		Ni I	178
4150.429		Co I	16
4150.557		Ti I	253
4150.67		Ne II	53
4150.809		Ti I	221
4150.963		Ti I	206
4150.97		Zr II	42
4151	P	O V	4
4151.00		Cr II	163
4151.46		N I	6
4151.52		Eu II	10
4151.60	P	Fe II	149
4151.79	P	Fe II	12
4151.957		Fe I	764
4151.970		Ce II	2
4151.98		La II	40
4152.07	P	Fe I	1049
4152.172		Fe I	18
4152.209		Sm II	16
4152.355		Sc I	20
4152.43		C III	21
4152.575		Cb I	1
4152.775		Cr I	261
4152.78		La II	78
4152.98	P	Fe II	45
4153.067		Cr I	35
4153.098		S II	44
4153.302		O II	19
4153.328		V I	26
4153.332		Sm II	54
4153.510		Gd II	117
4153.67	P	Ce II	159
4153.816		Cr I	35
4153.906		Fe I	695
4154.109		Fe I	694
4154.502		Fe I	355
4154.812		Fe I	694
4154.862		Gd II	67
4154.865		Ti I	221
4154.98		Fe III	
4155.217		Sm II	8,50
4155.525		Mn I	37
4155.532		Ce II	29
4156.083		Nd II	10
4156.11		A II	52
4156.24		Zr II	29
4156.265		Nd II	14
4156.3		Li II	3
4156.460		Fe I	693
4156.50		C III	21
4156.54		O II	19
4156.670		Fe I	419
4156.8		N II	50,51
4156.803		Fe I	354
4157.788		Fe I	695
4157.82		Cl II	
4158.420		Co I	144
4158.45	P	Fe II	12
4158.5906		A I	2
4158.76		O V	11
4158.798		Fe I	695
4158.90		Hf II	41
4159.033		Ce II	246
4159.407		Al II	71
4159.450		Al II	71
4159.634		Ti I	206
4159.686		V I	25
4159.725		Al II	71
4159.809		Al II	71
4160.239		Al II	71
4160.263		Al II	71
4160.28	P	Fe II	149
4160.56		P II	31
4160.561		Fe I	419
4160.62	P	Fe II	39
4160.78	P	Fe I	1116
4160.8		N II	50,51
4161.05		Cr II	162
4161.080		Fe I	689
4161.175		Ce II	22
4161.20		Zr II	42
4161.27	P	Cr II	127
4161.34	P	Ni I	86
4161.415		Cr I	305
4161.488		Fe I	422
4161.524		Ti II	21
4161.56	P	Cr II	127
4161.796		Sr II	3
4161.94		La II	
4162.072		V II	175
4162.39		S II	65
4162.40		Hf II	60
4162.698		S II	44,65
4162.732		Gd II	17
4162.80		C III	21
4162.93	P	Fe I	476a
4163.092		Gd II	44
4163.16	P	Cr I	35
4163.35	P	Fe I	1073
4163.516		Ce II	35
4163.625		Cr I	35
4163.644		Ti II	105
4163.655		V II	175
4163.658		Cb I	1
4163.676		Fe I	274,699
4163.94		Cr I	241
4164.015		V II	37
4164.134		Ti I	163
4164.1800		A I	2
4164.192		Pr II	8
4164.24	P	Fe I	694
4164.54		Pt I	6
4164.636		Ni I	28
4164.661		Cb I	1
4164.79		Fe III	118
4164.80		Fe I	418
4164.96		S III	
4165.11		S II	64
4165.184		Sc I	20
4165.519		Cr I	305
4165.606		Ce II	10
4166.003		Ba II	4
4166.311		Ti I	163
4166.37		Zr I	45
4166.73		P II	16
4166.86		Fe III	118
4167.159		Gd II	18
4167.2604		Mg I	15
4167.2712		Mg I	15
4167.52		Y I	7
4167.67	P	Ti II	21
4167.69	P	Fe II	149
4167.80		Cr I	107
4167.804		Ce II	29
4167.862		Fe I	599
4168.122		Cb I	1
4168.31		Cr I	261
4168.409		S II	44
4168.41		Fe III	118
4168.424		Al II	61
4168.511		Al II	61
4168.625		Fe I	689
4168.66	P	Fe II	22
4168.942		Fe I	694
4168.971		He I	52
4168.98		A II	
4169.09	P	Fe I	18
4169.230		O II	19

I A	Type	Element	Multiplet No.
4169.330		Ti I	163
4169.478		Sm II	24
4169.773		Ce II	161
4169.777		Fe I	693
4169.838		Cr I	278
4169.878		Ce II	173
4169.98	P	Fe II	12
4170.108		Gd II	35
4170.202		Cr I	278
4170.58	P	Cr II	18
4170.86		Cr II	181
4170.906		Fe I	482
4171.018		Ti I	206
4171.608		N II	43
4171.675		Cr I	261
4171.696		Fe I	941
4171.824		Pr II	16
4171.897		Ti II	105
4171.904		Fe I	650
4171.92		Cr II	18
4172.048		Ga I	1
4172.126		Fe I	649
4172.20	P	Fe II	148
4172.273		Pr II	13
4172.60		Cr II	18
4172.609		Ti I	163
4172.641		Fe I	689
4172.749		Fe I	19
4172.97	P	Fe I	909,1073
4173.05	P	Ti II	96
4173.18	P	Fe I	698
4173.234		Os I	4
4173.322		Fe I	355
4173.379		Nd II	16
4173.450		Fe II	27
4173.51		N II	50
4173.537		Ti II	21
4173.556		Gd II	117
4173.75		N II	50
4173.76		Y II	23
4173.77		A II	78
4173.926		Fe I	19
4174	P	N IV	14
4174.042		S II	64
4174.088		Ti I	55
4174.088		Ti II	105
4174.14		Y I	6
4174.15		Cr I	305
4174.27		Fe III	
4174.300		S II	
4174.31	P	Mn II	2
4174.33		Hf I	3
4174.419		Fe I	799
4174.472		Ti I	220
4174.795		Cr I	241
4174.917		Fe I	19
4174.941		Cr I	278
4175.227		Cr I	261
4175.538		Gd I	5
4175.606		Nd II	39
4175.640		Fe I	354
4175.89	P	Fe I	694
4175.945		Cr I	106
4176.080		Ce II	135
4176.164		N II	42
4176.44	P	Fe II	149
4176.57	P	Fe I	689
4176.571		Fe I	695
4176.793		V I	6
4177.07	P	Fe I	690
4177.17		Cr I	133
4177.321		Nd II	10
4177.357		Ti I	163
4177.50		Hf II	51
4177.52	P	Fe I	172
4177.54		Y II	14
4177.59		Co I	2
4177.597		Fe I	18
4177.70	P	Fe II	21
4178.019		Sm II	16,50
4178.39		A II	7
4178.390		V II	25
4178.855		Fe II	28
4179	P	O V	4
4179.05		Cr I	250
4179.062		V II	19
4179.226		Co I	144
4179.25		Fe III	
4179.257		Cr I	179,250
4179.31		A II	52
4179.419		V I	25
4179.422		Pr II	4
4179.43		Cr II	26
4179.55		Hf II	114
4179.585		Nd II	19
4179.667		N II	50
4179.81		Zr II	99
4179.860		Ti I	206
4179.90	P	Co I	1
4179.92	P	Cr II	127
4180.41	P	Fe I	274
4180.498		Ti I	206
4180.68		Pr II	23
4180.7		S II	64
4180.86		V II	19
4180.97	P	Fe II	148
4180.97		La II	133
4181.17		N II	49
4181.17	P	Ti II	96
4181.20	P	Fe I	908
4181.50		Cr II	181
4181.55	P	Fe I	763
4181.758		Fe I	354
4181.8838		A I	7
4182.384		Fe I	476a
4182.591		V I	24
4182.69	P	Fe II	149
4182.790		Fe I	694
4182.98		A II	36
4183	P	N IV	14
4183.025		Fe I	697
4183.20	P	Fe II	21
4183.294		Ti I	220
4183.31		Zr I	51
4183.435		V II	37
4183.764		Sm II	4
4184.09		Fe III	22
4184.22		Fe I	274
4184.252		Gd II	15
4184.26		Lu II	6
4184.329		Ti II	21
4184.475		Ni I	89
4184.895		Cr I	155
4184.895		Fe I	355
4185.334		Ce II	124
4185.345		Cr I	106
4185.456		O II	36
4185.50	P	Cr II	163
4185.61		Cl II	43
4185.66	P	Fe I	1104
4185.95		S II	
4186.01	P	Ti I	220
4186.033		Nd II	24
4186.08	P	Cr II	127
4186.119		Ti I	129
4186.24		K II	1
4186.359		Cr I	249
4186.599		Ce II	1
4186.70		Zr II	97
4187.044		Fe I	152
4187.05		C III	18
4187.246		Co I	93
4187.31		La I	5
4187.323		Ce II	86
4187.56		Zr I	45
4187.59		Fe I	694
4187.616		Tm I	
4187.68		Hf II	73
4187.802		Fe I	152
4188.099		Gd II	17
4188.128		Sm II	50
4188.694		Ti I	220
4188.82		Cl II	43
4188.88		Al III	15
4189.10		Fe III	
4189.50		Co I	2
4189.518		Pr II	8
4189.564		Fe I	940
4189.67		A II	
4189.71		S II	44,64
4189.788		O II	36
4189.841		V I	24
4189.96		Cr I	106
4190.16		Cr I	84
4190.29		Ti II	21
4190.40		V II	25
4190.626		Ce II	169
4190.66		Cr I	35
4190.712		Co I	1
4190.7127		A I	2
4190.738		Si II	
4190.89		V II	37
4191.0296		A I	7
4191.067		Gd II	34
4191.271		Cr I	35
4191.436		Fe I	152
4191.50		Zr I	108
4191.558		V I	24
4191.59		Cl II	43
4191.615		Pr II	12
4191.685		Fe I	355
4191.750		Cr I	35
4192.07		Ni II	10
4192.103		Cr I	273
4192.35		La II	78
4192.50		O II	42
4192.856		Co I	94
4193.094		Ce II	79
4193.34		La II	
4193.37	P	La II	133
4193.44		Mg II	28
4193.51		S II	10
4193.662		Cr I	248
4193.874		Ce II	85
4193.89		Cr I	248
4194.36		La II	160
4194.50	P	Fe I	274
4194.951		Cr I	248
4195.11		Cl II	43
4195.337		Fe I	693
4195.41		Cr II	161
4195.531		Ni I	239
4195.615		Fe I	478
4195.70		N III	6
4195.83		V II	19
4196.218		Fe I	693
4196.26		O II	42
4196.335		Ce II	123
4196.533		Fe I	418
4196.55		La II	41
4196.64	P	Ti II	21
4196.69		Fe III	22
4196.72		O II	42
4197.069		Gd II	117
4197.10	P	Fe I	18
4197.234		Cr I	249
4197.38	P	Fe I	976
4197.47		Cr I	249
4197.668		Ce II	136
4197.681		Gd II	
4197.95	P	Ti II	96
4197.998		Ce II	209
4198.174		Si II	
4198.268		Fe I	693
4198.310		Fe I	152
4198.3170		A I	4
4198.425		Co I	2
4198.431		Ce II	207
4198.525		Cr I	249
4198.611		V I	24
4198.645		Fe I	693
4198.669		Ce II	7
4198.724		Ce II	3
4199.02	P	Cr II	180
4199.09	P	Fe II	141
4199.098		Fe I	522
4199.099		Nd II	15
4199.27		Y II	5
4199.37	P	Fe I	416
4199.83		He II	3
4199.902		Ru I	8
4199.918		Tm II	1
4199.93		A II	124
4199.97		Fe I	3
4200.02		N III	6
4200.06		Fe III	
4200.09	P	Fe I	993
4200.103		Cr I	
4200.38		Fe III	
4200.40	P	Ti II	96
4200.464		Ni I	89
4200.6751		A I	2
4200.752		Ti I	220
4200.78	P	Fe I	44
4200.89		V I	6
4200.930		Fe I	689
4201.45		Zr I	45
4201.50		La II	
4201.58		A II	52
4201.723		Ni I	238

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4201.73		Fe I	799	4213.86		Zr I	45	4225.956		Fe I	521
4201.851		Rb I	2	4214.041		Ce II	203	4226.14		Fe III	44
4201.99		A II	8,124	4214.73		N I	5	4226.426		Fe I	352
4202.031		Fe I	42	4215.023		Gd II	32	4226.44		Cl I	9
4202.154		Ni I	179	4215.430		Fe I	274,419	4226.570		Ge I	4
4202.350		V II	25	4215.524		Sr II	1	4226.65		A II	113
4202.4		Al II	87	4215.556		Rb I	2	4226.728		Ca I	2
4202.755		Fe I	476a,521	4215.69		N III	6	4226.76	P	Cr I	105
4202.944		Ce II	186	4215.76		Zr II	68	4226.827		Al II	46
4203.051		Sm II	42	4215.77		Cr II	18	4226.918	Forb	Al II	46
4203.30		Fe I	418	4215.92		N I	5	4227.02		A II	113
4203.43		A II		4215.975		Fe I	273	4227.14	P	Fe II	45
4203.465		Ti I	220	4216.04		Ba II	17	4227.140		Gd II	43
4203.570		Fe I	19	4216.186		Fe I	3	4227.34	P	Ti II	33
4203.590		Cr I	35	4216.365		Cr I	132	4227.42	P	Fe I	689
4203.67	P	Fe I	1245	4217	P	C IV	11	4227.420		Al II	46
4203.730		Tm I		4217.07		Cr II	18	4227.434		Fe I	693
4203.953		Fe I	850	4217.09		O I	33	4227.509		Al II	46
4203.987		Fe I	355	4217.15		Ne II	52	4227.545	Forb	Al II	46
4204.03		La II	53	4217.195		Gd II	49	4227.654		Ti I	278
4204.19		Cr I	35	4217.23		S II	44	4227.719		Nd II	19
4204.20		V II	25	4217.282		Nd II	57	4227.73		Cr II	155
4204.471		Cr I	272	4217.34	P	Ti II	96	4227.746		Ce II	8
4204.54		Cl II	43	4217.45		A II		4227.749		N II	33
4204.66	P	Cr II	127	4217.551		Fe I	693	4227.76		Zr I	45
4204.69		Y II	1	4217.56		La II	78	4227.875		Al II	46
4204.83	P	Cr II	180	4217.591		Ce II	19	4227.945		Al II	46
4204.857		Gd II	46	4217.626		Cr I	132	4227.999		Al II	46
4205.05		Eu II	1	4218.12	P	Fe I	19	4228.18		A II	8
4205.05	P	V II	25	4218.18	P	Ti II	33	4228.200		Nd II	36
4205.07		Cl II	67	4218.21	P	Fe I	172	4228.71	P	Fe I	690
4205.080		V II	37	4218.69		A II	64	4229.516		Fe I	416,649
4205.19		A II	111	4218.710		V I	24	4229.704		Sm II	4
4205.37	P	Mn II	2	4219.364		Fe I	800	4229.760		Fe I	41
4205.48	P	Fe II	22	4219.383		W I	3	4229.803		Gd II	117
4205.546		Fe I	689	4219.41	P	Fe I	419	4229.81		Cr II	26
4205.595		Nd II	19	4219.51		V I	24	4229.89		A II	
4205.91		Zr II	133	4219.59	P	Fe I	763	4229.955		Co I	1
4205.92		Fe III	22	4219.74	P	Fe I	832	4230.29		Cr I	106
4205.92	P	Ti II	33	4219.76		Ne II	52	4230.35		N I	5
4206.128		Sm II	38	4220.047		V II	25	4230.39	P	Ni I	150
4206.21		Ca II	16	4220.05	P	Fe I	994	4230.481		Cr I	132
4206.375		Mn II	7	4220.13		Ca II	16	4230.584		Fe I	478
4206.43		Ne II	53	4220.258		Nd II	32	4230.95		La II	83
4206.59		Hf II	74	4220.32		Fe III		4230.98		S II	67
4206.702		Fe I	3	4220.347		Fe I	482	4231.040		Ni I	136
4206.739		Pr II	8	4220.45		Cr I	106	4231.165		V II	25
4206.899		Cr I		4220.659		Sm II	15,50	4231.35		C I	17
4207.130		Fe I	352	4220.92		Ne II	52	4231.525		Fe I	647
4207.23	P	Mn II	2	4221.572		Cr I	155,248	4231.60		Ne II	52
4207.35		Cr II	26	4221.696		Ni I	86	4231.64		Zr II	99
4207.51		Cr I	133	4222.00		Cr II	180	4231.745		Ce II	
4207.61		La II	133	4222.15		P III	3	4232.065		V II	225
4208.03		Cl II	43	4222.219		Fe I	152	4232.222		Cr I	294
4208.357		Cr I	249	4222.39		Fe III		4232.378		Nd II	8
4208.610		Fe I	689,696	4222.41		Zr II	80	4232.43		Hf II	72
4208.99		Zr II	41	4222.599		Ce II	36	4232.460		V I	111
4209.02		Cr II	162	4222.67		A II	77	4232.724		Fe I	3
4209.368		Cr I	248	4222.732		Cr I	132	4232.866		Cr I	132
4209.409		Ce II	3	4222.78		O I	33	4232.952		V I	111
4209.649		Mo II	3	4222.97		K II	7	4232.96	P	Cr II	180
4209.74		V II	25	4222.98		Pr II	4	4233.167		Fe II	27
4209.756		Cr I	155	4223.020		Gd II	141	4233.25		Cr II	31
4209.84	P	Cr II	180	4223.04		N I	5	4233.32		O I	33
4209.857		V I	24	4223.47		Cr I	132	4233.608		Fe I	152
4210.00		A II	78	4223.73	P	Fe I	417	4233.996		Co I	1
4210.22		La II		4224.09	P	Cr II	31	4234.000		V I	6,111
4210.352		Fe I	152	4224.176		Fe I	689	4234.09		Cl II	24
4210.352		Sm II	8	4224.27		Zr II	29	4234.196		Nd II	20
4210.39	P	Fe I	482	4224.30	P	Fe I	1104	4234.251		V II	24
4210.62		Zr II	97	4224.43		P II	16	4234.515		Cr I	178
4210.77		Cr I	106	4224.509		Fe I	689	4234.524		V I	6
4210.87		Fe III		4224.51		V II	25	4234.55		V II	200
4211	P	O V	4	4224.514		Cr I	155	4234.573		Sm II	42
4211.286		Nd II	57	4224.57		Ne II	52	4234.727		Ce II	170
4211.349		Cr I	133	4224.63	P	Fe I	274	4235.140		Mn I	23
4211.51		Fe III	104	4224.74		N I	5	4235.290		Mn I	23
4211.729		Ti I	279	4224.795		Ti I	301	4235.49		Cl II	71,83
4211.80	P	Fe II	21	4224.85		Cr II	162	4235.54		Fe III	
4211.88		Zr II	15	4224.92		Cl II	83	4235.54	P	Ni I	256
4212.001		Gd II	15	4225.02	P	Ni I	169	4235.65	P	Fe I	215
4212.06	P	Fe I	697	4225.148		Gd II	14	4235.73		Y II	5
4212.063		Ru I	6	4225.228		V II	37	4235.756		V I	111
4212.44		Si IV	5	4225.327		Pr II	8	4235.84	P	Fe I	172
4212.95		Pd I	7	4225.328		Sm II	22	4235.94		Y I	5
4213.036		Ce II	169	4225.460		Fe I	693	4235.942		Fe I	152
4213.179		Cr I	155	4225.67		K II	4	4235.96	P	Fe I	692
4213.42	P	Fe I	274	4225.71	P	Fe I	1102	4235.98		Cr I	132
4213.5		S II	44	4225.79	P	Fe I	118	4236.33	P	Cr II	17
4213.650		Fe I	355	4225.850		Gd I	4	4236.372		Ni I	237

I A	Type	Element	Multiplet No.
4236.56		Zr II	110
4236.66	P	Fe I	907
4236.745		Sm II	53
4236.76		Fe I	906
4236.82		V II	18
4236.930		N II	48
4237.049		N II	48
4237.085		Fe I	19
4237.162		Fe I	
4237.21		Fe III	104
4237.23		A II	32
4237.27		Cr I	106
4237.57	P	Al II	23
4237.663		Sm II	8
4237.67	P	Fe I	418
4237.710		Cr I	132
4237.786		Ti I	252
4237.889		Ti I	284
4238.027		Fe I	689,696
4238.38		La II	41
4238.61	P	Fe I	849
4238.69	P	Cr II	17
4238.78		Fe III	104
4238.782		Gd II	
4238.79	P	Mn II	2
4238.816		Fe I	693
4238.957		Cr I	131
4239.01	P	Fe I	274
4239.31		Zr I	45
4239.36	P	Fe I	907
4239.5		O III	1
4239.725		Mn I	23
4239.735		Fe I	416
4239.847		Fe I	18,273
4239.912		Ce II	2
4239.95	P	Fe I	476a
4239.95		Ne II	52
4240.35		Zr I	45
4240.372		Fe I	764
4240.456		Ca I	38
4240.705		Cr I	105,178
4240.75		Al II	36
4241.019		Pr II	9
4241.112		Fe I	351
4241.20		La II	163
4241.20		Zr I	45
4241.276		Gd II	117
4241.38		Cl II	24
4241.68		Zr I	45
4241.787		N II	47,48
4241.93		Hf II	108
4242.153		Tm II	5
4242.20		Ne II	52
4242.38		Cr II	31
4242.47		Mg II	20
4242.588		Fe I	273
4242.723		Ce II	58
4242.730		Fe I	649
4242.82		Cr I	131
4242.894		V II	200
4243.368		Fe I	906
4243.528		Pr II	33
4243.60		B III	1
4243.71		A II	63,78
4243.786		Fe I	994
4243.85		Fe III	
4244.17		Ne II	62
4244.26		Mn II	7
4244.33		Cr I	240
4244.374		W I	1
4244.53	P	Fe II	12
4244.55		P II	30
4244.702		Sm II	27
4244.80		Ni II	9
4245.258		Fe I	352
4245.358		Fe I	691
4245.84		Hf II	72
4245.976		Ce II	158
4246.02	P	Fe I	649
4246.090		Fe I	906
4246.16		F II	9
4246.41		Cr II	31
4246.568		Gd II	67
4246.59	P	Fe I	689
4246.68		P III	3
4246.711		Ce II	77
4246.79	P	Fe I	216
4246.829		Sc II	7
4246.879		Nd II	14
4247.29	P	Fe I	905
4247.31	P	Fe I	172
4247.367		Nd II	8
4247.43	P	Fe II	125
4247.432		Fe I	693
4247.56		C III	11
4248.228		Fe I	482
4248.344		Cr I	131
4248.40	P	Fe I	19
4248.676		Ce II	1
4248.72	P	Fe I	939
4248.73		Cr I	105
4248.820		V II	24
4249.114		Ti I	252
4249.32	P	Fe I	117
4249.33		Hf II	39
4249.57		P IV	2
4249.81	P	Cr I	155
4249.92		S II	66
4249.95		Fe III	
4249.99		La II	79
4250.125		Fe I	152
4250.68		Ne II	52
4250.689		Mo II	3
4250.790		Fe I	42
4250.90	P	Fe I	478
4251.1852		A I	2
4251.49	P	Fe II	12
4251.618		Ti I	162
4251.733		Gd II	15
4251.769		Ti I	251
4251.88	P	Fe I	216
4252.05	P	Ti II	95
4252.107		Ni I	136
4252.243		Cr I	131
4252.302		Co I	1
4252.62		Cr II	31
4253.02		Mn II	7
4253.28		N I	4
4253.356		Ce II	77
4253.366		Gd II	46
4253.51		Cl II	24
4253.52	P	Fe I	690
4253.55	P	Fe I	1245
4253.593		S III	4
4253.612		Gd II	
4253.74		O II	101
4253.93	P	Fe I	905
4253.98		O II	101
4254.346		Cr I	1
4254.41		V II	18
4254.420		Pr II	27
4254.7		N I	4
4254.938		Fe I	419,477
4255.01		S II	44
4255.20		Fe III	
4255.499		Fe I	416
4255.502		Cr I	105
4255.62		A II	63
4255.784		Ce II	81
4256.025		Ti I	252
4256.156		Ce II	172
4256.16		Cr II	192
4256.212		Fe I	690
4256.239		Nd II	59
4256.32	P	Fe I	172
4256.393		Sm II	37
4256.620		Cr I	131
4256.79		Fe I	1102
4257.02		V II	200
4257.121		Ce II	123
4257.368		Cr I	131
4257.42		S II	66
4257.659		Mn I	23
4257.82		Ne II	52
4258.05		Zr II	15
4258.155		Fe II	28
4258.320		Fe I	3
4258.35	P	Fe II	21
4258.523		Ti I	252
4258.619		Fe I	351
4258.956		Fe I	419
4259.15		Cr I	131
4259.18		S II	66
4259.203		Mn II	7
4259.312		V I	6
4259.34	P	Fe I	416
4259.3618		A I	9
4259.52		Cl II	42,52
4259.748		Ce II	176
4259.95	P	Fe I	70
4259.988		Fe I	689
4260.135		Fe I	476a
4260.19		Cr I	240
4260.47	P	Mn II	2
4260.479		Fe I	152
4260.73	P	Fe I	351
4260.738		Ti I	251
4260.75		V II	18,24
4260.854		Os I	1
4261.164		Ce II	19
4261.22		Cl II	66
4261.354		Cr I	96
4261.609		Ti I	252
4261.615		Cr I	
4261.796		Pr II	23
4261.80	P	Cr II	17
4261.92		Cr II	31
4262.092		Gd II	44
4262.133		Cr I	84,178
4262.38		Cr I	154
4262.677		Sm II	37
4262.72		Hf II	15
4263.134		Ti I	162
4263.141		Cr I	247
4263.40		K II	2
4263.427		Ce II	254
4263.49	P	Cr II	17
4263.59		La II	84
4263.836		V II	24
4263.895		Fe II	
4264.19	P	Cr II	17
4264.209		Fe I	692
4264.370		Ce II	239
4264.50		V II	24
4264.743		Fe I	993
4264.88		Y II	71
4264.91		Zr II	98
4265.075		Sm II	15
4265.170		V I	
4265.260		Fe I	993,994
4265.273		Ti I	252
4265.723		Ti I	162
4265.924		Mn I	23
4266.227		Ti I	252
4266.23	P	Cr II	37
4266.2867		A I	4
4266.44		Cr I	199
4266.53		A II	7
4266.716		Nd II	58
4266.72		Zr II	80
4266.82		Cr I	105
4266.88		Fe III	
4266.968		Fe I	273
4267.02		C II	6
4267.27		C II	6
4267.30	P	Zr II	132
4267.47		A II	52
4267.802		S II	49
4267.830		Fe I	482
4267.95		Ba II	11
4268.01		Zr I	45
4268.032		Co I	1
4268.096		Ir I	4
4268.10		Hf II	86
4268.446		Co I	127
4268.643		V I	88
4268.731		Gd II	68
4268.744		Fe I	649
4268.788		Cr I	271
4268.928		Ti I	252
4268.93		Cr II	192
4268.99		C I	16
4269.02		Cr I	240
4269.28		Cr II	31
4269.50		La II	76
4269.67		Hf II	26
4269.76		S II	49
4269.87	P	Fe I	690
4269.951		Cr I	154
4270.139		Ti I	251
4270.189		Ce II	204
4270.31	P	Fe I	215
4270.39	P	Fe II	125
4270.427		Co I	29
4270.565		Nd II	12
4270.61		Cl II	66
4270.64		V II	23
4270.716		Ce II	21
4271.061		Cr I	154
4271.159		Fe I	152

I A	Type	Element	Multiplet No.
4271.47		Fe III	
4271.554		V I	88
4271.65	P	Fe I	70
4271.764		Fe I	42
4271.94	P	Ti II	95
4271.95	P	Fe I	171
4272.1690		A I	4
4272.271		Pr II	15
4272.440		Ti I	44
4272.789		Nd II	11
4272.85		Hf II	14
4272.910		Cr I	96
4273.17		O II	68
4273.312		Ti I	251
4273.317		Fe II	27
4273.42		Fe III	121
4273.52		Zr II	28
4273.87		Fe I	478
4274.13		O II	68
4274.408		Ti I	252
4274.584		Ti I	44,162
4274.803		Cr I	1
4275.19		A II	77
4275.52		O II	67
4275.561		Ce II	206
4275.57		Cr II	31
4275.64		La II	40
4275.72		Fe I	215
4275.90		O II	68
4275.973		Cr I	240
4276.21		O II	68
4276.441		Ti I	148
4276.51		Cl II	66
4276.657		Ti I	252
4276.684		Fe I	976
4276.71		O II	54,67
4276.958		V I	88
4277.246		Mo I	7
4277.279		Nd II	17
4277.322		Th II	2
4277.37		Zr II	40
4277.40		O II	67,68
4277.41	P	Fe I	214
4277.55		A II	32
4277.68		Fe I	172
4277.90		O II	67
4278.01	P	Fe I	1102
4278.10		Cr II	161
4278.128		Fe II	32
4278.231		Ti I	291
4278.234		Fe I	691
4278.38	P	Fe I	351
4278.54		S II	49
4278.829		Ti I	252
4278.866		Ce II	111
4278.893		V II	225
4278.94	P	Cr II	17
4279.023		Mo II	3
4279.3		Y II	70
4279.480		Fe I	993
4279.678		Sm II	27
4279.864		Fe I	351
4279.927		Sc II	15
4280.069		Ti I	252
4280.141		Ce II	225
4280.27		La I	5
4280.33	P	Cr II	17
4280.405		Cr I	247
4280.490		Gd II	15
4280.53		Fe I	598
4280.63	P	Fe I	416
4280.789		Sm II	46
4281.009		Sm II	
4281.03	P	Cr II	17
4281.099		Mn I	23
4281.371		Ti I	44
4281.40		O II	54
4281.60	P	Fe I	171
4282.20		Zr I	45
4282.21		Zr II	132
4282.406		Fe I	71
4282.440		Pr II	19
4282.443		Nd II	
4282.570		Nd II	13
4282.63		S II	49
4282.702		Ti I	162
4282.82		O II	54
4282.90		A II	7
4282.96		O II	67
4282.97		Al II	86
4283.010		Ca I	5
4283.13		O II	67
4283.40	P	Fe I	215
4283.70		S III	
4283.75		O II	67
4283.772		Mn II	6
4283.87	P	Fe I	19
4284.055		V I	88
4284.084		Mn I	23
4284.21		Cr II	31
4284.415		Fe I	417
4284.425		Mn II	6
4284.51		N III	
4284.518		Nd II	10
4284.683		Ni I	86
4284.725		Cr I	96
4284.988		Ti I	148
4284.991		S III	4
4285.19	P	Ni I	86
4285.366		Ce II	11
4285.445		Fe I	597
4285.496		Sm II	27
4285.70		O II	78
4285.782		Co I	1
4285.832		Fe I	904
4285.96		C II	42
4286.006		Ti I	44
4286.13		Fe III	121
4286.13		V II	23
4286.311		Fe II	
4286.440		Fe I	414
4286.51		Zr II	69
4286.640		Sm II	42
4286.97		La II	75
4286.976		Fe I	976
4287.405		Ti I	44
4287.71	P	Ti I	45
4287.80		Ba II	16
4287.893		Ti II	20
4288.005		Ni I	178
4288.148		Fe I	273
4288.161		Ti I	43,79
4288.21		N III	
4288.53		P II	33
4288.65		Mo I	7
4288.72		N III	
4288.78	P	Ti I	45
4288.78		V II	17
4288.83		O II	54
4288.962		Fe I	214
4289.068		Ti I	44
4289.18		Zr II	117
4289.29	P	Fe I	117
4289.364		Ca I	5
4289.454		Ce II	135
4289.721		Cr I	1
4289.919		Ti I	205
4289.938		Ce II	111
4290.222		Ti II	41
4290.382		Fe I	416
4290.40		Ne II	57
4290.55		N III	
4290.80		N III	
4290.870		Fe I	351
4290.933		Ti I	44
4291.214		Ti I	45,147
4291.25		O II	55
4291.44	P	Fe I	273
4291.45		S II	49
4291.466		Fe I	3,41
4291.76		Cl II	19
4291.816		V I	120
4291.88		Ti I	251
4291.964		Cr I	240
4292.00		C II	41
4292.13	P	Fe I	70
4292.182		Sm II	32
4292.23		O II	78
4292.246		Mn II	6
4292.293		Fe I	70
4292.676		Ti I	79
4292.747		Gd II	128
4292.767		Ce II	205
4292.885		Zn I	3
4293.14		Zr II	110
4293.228		Mo I	7
4293.565		Cr I	96
4294.04	P	Fe I	214
4294.101		Ti II	20
4294.128		Fe I	41
4294.432		S II	49
4294.623		W I	6
4294.76		N III	
4294.767		Sc II	15
4294.78		Zr I	45
4294.82		O II	54
4294.939		Fe I	598
4295.37	P	Cr II	37
4295.751		Ti I	44
4295.757		Cr I	64
4295.888		Ni I	178
4296.05		La II	53
4296.069		Ce II	172
4296.076		Gd II	46
4296.107		V I	120
4296.11		C II	42
4296.30		Cr I	176
4296.30		Gd II	117
4296.567		Fe II	28
4296.680		Ce II	2
4296.74		Zr II	98
4296.743		Sm I	3
4296.786		Ce II	57
4296.86		Fe III	121
4297.050		Cr I	64
4297.173		Gd II	
4297.60		Ba II	7
4297.681		V I	120
4297.711		Ru I	5
4297.738		Cr I	247
4297.764		Pr II	7
4297.99		A II	
4298.029		V I	120
4298.040		Fe I	520
4298.21	P	Fe I	476a
4298.515		Ni I	178
4298.664		Ti I	44
4298.767		Ni I	28
4298.986		Ca I	5
4299.17	P	Ti I	45
4299.177		F II	7
4299.229		Ti I	148
4299.242		Fe I	152
4299.25	P	Fe I	597
4299.362		Ce II	47
4299.49	P	Fe I	648
4299.636		Ti I	43
4299.65		Fe I	416
4299.718		Cr I	96
4300.052		Ti II	41
4300.1011		A I	4
4300.197		Mn II	6
4300.21	P	Fe I	975
4300.331		Ce II	134
4300.44		La II	9
4300.52	P	Ti I	205
4300.566		Ti I	44
4300.66		A II	36,76
4300.828		Fe I	976
4301.089		Ti I	44
4301.130		V II	225
4301.178		Cr I	
4301.81		Zr II	109
4301.928		Ti II	41
4302.100		Pr II	32
4302.12	P	Ni I	102
4302.123		W I	7
4302.191		Fe I	520
4302.527		Ca I	5
4302.81		O II	100
4302.88		Zr I	45
4302.979		Ti I	79
4303.06		O II	100
4303.166		Fe II	27
4303.235		Co I	1
4303.573		Nd II	10
4303.82		O II	54
4304.07		Cl II	19
4304.087		Gd II	128
4304.11		La II	165
4304.15	P	Fe I	647
4304.15		V II	213
4304.552		Fe I	414
4304.81		Fe III	121
4304.87	P	Fe I	598,756
4304.895		Gd II	
4305.00		K II	5
4305.13	P	Fe I	272
4305.20		Fe I	760
4305.447		Sr II	3

I A	Type	Element	Multiplet No.
4305.453		Cr I	96
4305.455		Fe I	476
4305.46		N I	
4305.474		Ti I	147
4305.53		O II	55
4305.715		Sc II	15
4305.763		Pr II	8
4305.910		Ti I	44
4306.214		V I	5
4306.340		Gd I	4
4306.58	P	Fe I	691
4306.724		Ce II	1
4306.945		Ti I	43
4307.08	P	Fe I	690
4307.184		V I	5
4307.20		Al II	85
4307.31		O II	53
4307.42		Cl II	19
4307.741		Ca I	5
4307.778		Nd II	63
4307.900		Ti II	41
4307.906		Fe I	42
4308.233		Gd II	47
4308.514		Ti I	79
4308.54	P	Fe I	70
4308.94		Zr II	88
4308.96		O II	64
4309.012		Sm II	15
4309.036		Fe I	849
4309.06		Cl II	52
4309.071		Ti I	235
4309.10		K II	7
4309.11		A II	36
4309.25		A II	99
4309.32		Ba II	11
4309.382		Fe I	414
4309.46	P	Fe I	478
4309.62		Y II	5
4309.739		Ce II	126
4309.795		V I	5
4310.37	P	Fe I	994
4310.37		Fe III	121
4310.373		Ti I	79
4310.699		Ce II	133
4310.72	P	V II	36
4310.981		Gd II	15
4311.654		Ti I	205
4312.10		O II	79
4312.23		Zr II	99
4312.469		Cr I	177
4312.550		Mn I	23
4312.861		Ti I	41
4313.034		Fe II	220
4313.04	P	Fe I	273
4313.11		N I	
4313.30		V II	23
4313.43		O II	78
4313.50		C II	28
4313.845		Gd I	4
4314.084		Sc II	15
4314.18		Si IV	4
4314.289		Fe II	32
4314.356		Ti I	45
4314.511		Nd II	9
4314.74	P	Ti I	43
4314.801		Ti I	43
4314.979		Ti II	41
4315.087		Fe I	71
4315.35		O II	64,79
4315.80		O II	78
4315.90		La II	41
4315.95	P	Fe I	171
4316.052		Gd II	43
4316.258		V II	23
4316.266		Gd II	67,68
4316.807		Ti II	94
4317.04	P	Fe I	762
4317.139		O II	2
4317.32		Zr II	40
4317.42		C II	28
4317.65		O II	53
4317.70		N I	
4318.216		Fe II	220
4318.631		Ti I	235
4318.652		Ca I	5
4318.68		S II	49
4318.77	P	Cr II	37
4318.81	P	Fe I	215
4318.92		C II	28
4318.936		Sm II	27
4319.45	P	Fe I	214
4319.51		Hf II	52
4319.631		O II	2
4319.641		Cr I	96
4319.69		A II	87
4319.717		Fe II	220
4319.93		O II	61
4320.13	P	Fe I	1170
4320.36	P	Fe I	691
4320.52		Fe I	691
4320.592		Cr I	96
4320.69		Hf II	40
4320.723		Ce II	125
4320.745		Sc II	15
4320.965		Ti II	41
4321.110		Gd II	46
4321.238		Cr I	83
4321.341		Fe II	220
4321.36		Hf II	86
4321.37		N III	10
4321.617		Cr I	177
4321.655		Ti I	235
4321.95		C II	28
4322.02		V II	17
4322.195		Gd II	15
4322.51		La II	25
4322.66		Ne II	63
4322.70	P	Fe I	215
4323.284		Sm II	8
4323.35		Cl I	9
4323.37	P	Fe I	171
4323.440		Ti I	79
4323.523		Cr I	
4323.551		Pr II	23
4323.62		Zr II	141
4323.81		Fe III	32
4323.93		N III	10
4324.064		Gd II	68
4324.36	P	Fe II	147
4324.961		Fe I	70
4325.010		Sc II	15
4325.075		Cr I	104
4325.1	P	Mn II	6
4325.134		Ti I	235
4325.22		V II	233
4325.361		Ni I	116
4325.566		Gd II	103
4325.607		Ni I	86
4325.64		Zr II	108
4325.65		Cr I	176
4325.7		Li II	5
4325.70		C III	7
4325.73		Ba II	17
4325.74	P	Fe I	2
4325.765		Fe I	42
4325.766		Nd II	10
4325.77		O II	2
4325.88		C II	28
4325.95	P	Fe I	598
4326.359		Ti I	43
4326.445		Sr I	6
4326.74		Ba II	7
4326.756		Mn II	6
4326.762		Fe I	413
4326.826		Ce II	224
4326.986		Ti I	43
4327.04	P	Fe II	20
4327.100		Fe I	761
4327.125		Gd II	15
4327.48		O II	41
4327.89		O II	41
4327.92		Fe I	597
4328.15		N III	10
4328.22		Si IV	4
4328.62		O II	61
4328.91	P	Cr II	37
4329.016		Sm II	15
4329.415		Pr II	27
4329.54	P	Fe I	70
4329.62		Ba II	17
4330.024		V I	5
4330.14		N III	10
4330.264		Ti II	94
4330.44		N III	10
4330.445		Ce II	82
4330.606		Gd II	46
4330.700		Ti II	41
4330.720		Ni I	149
4330.81	P	Fe I	475
4330.962		Fe I	597
4331.13		O II	66,75
4331.231		Co I	168
4331.25		A II	7
4331.47		O II	41
4331.529		Fe II	
4331.55		V II	36
4331.645		Ni I	52
4331.79		V II	23
4331.89		O II	41
4331.93		Mg II	27
4332.0		Al II	31
4332.06		A II	1
4332.569		Cr I	176
4332.71		S III	4
4332.76		O II	65
4332.823		V I	5
4332.88	P	Fe II	33
4333.06	P	Fe I	1135
4333.28		Zr II	132
4333.5612		A I	9
4333.76		La II	24
4333.84		S II	49
4333.913		Pr II	8
4334.153		Sm II	27
4334.29		O II	63,64
4334.65		Hf II	69
4334.77	P	V II	36
4334.840		Ti I	43
4334.96		La II	77
4335	P	N V	3
4335.15		Hf II	6
4335.290		Gd II	128
4335.3380		A I	9
4335.46	P	Fe I	477
4335.53		N III	10
4335.89		Fe I	891
4336.255		Ce II	89
4336.26		Cl II	19
4336.36		Zr II	119
4336.48		N I	
4336.51		A II	
4336.60	P	Fe I	990
4336.66		Hf II	74
4336.86	P	Fe I	692
4336.865		O II	2
4337.049		Fe I	41
4337.10		A II	113
4337.33		Ti II	94
4337.510		Gd II	128
4337.52	P	Fe I	214
4337.566		Cr I	22
4337.63		Zr II	119
4337.777		Ce II	82
4337.78		La II	138
4337.916		Ti II	20
4338.24		A II	88
4338.260		Fe I	70
4338.476		Ti I	204
4338.52		Si III	3
4338.67		He II	3
4338.694		Pr II	31
4338.697		Nd II	68
4338.70	P	Fe II	32
4338.799		Cr I	198
4338.84	P	Fe I	117
4339.13	P	Co I	1
4339.287		D	1
4339.317		Ce II	34
4339.450		Cr I	22
4339.52		N III	10
4339.56		Zr II	41
4339.718		Cr I	22
4339.78		Ne II	62
4340.018		Ti I	174
4340.03		K II	4
4340.130		Cr I	64
4340.30		S III	4
4340.36		O II	77
4340.468		H	1
4340.49	P	Fe I	272
4340.51	P	Fe I	691
4341.013		V I	5
4341.09		Cr II	179
4341.13		Zr I	61
4341.23	P	Fe I	691
4341.282		Gd II	14
4341.369		Ti II	32
4341.42		Ne II	59
4341.48		Cr I	64
4341.57	P	Fe I	644

I A	Type	Element	Multiplet No.
4342.00		O II	77
4342.071		Nd II	8
4342.179		Gd II	15
4342.23		Zr II	98
4342.83		O II	103
4342.832		V I	103
4342.84		S II	43
4343.163		Cr I	64
4343.22	P	Fe I	644
4343.257		Fe I	645
4343.36		O II	75,103
4343.62		Cl II	19
4343.699		Fe I	517
4343.798		Ti I	204
4343.86	P	Fe I	756
4343.987		Mn II	6
4344.291		Ti II	20
4344.300		Gd II	44
4344.42		O II	65
4344.487		Gd II	31
4344.507		Cr I	22
4345.085		Cr I	198
4345.1682		A I	9
4345.562		O II	2
4345.6	P	Mn II	6
4345.858		Sm II	7
4345.963		Ce II	251
4346.104		Ti I	234
4346.458		Gd I	4
4346.50	P	Fe II	202
4346.558		Fe I	598
4346.610		Ti I	204
4346.833		Cr I	104
4346.866		Al II	70
4346.89		V II	17
4346.918		Al II	70
4347.223		Al II	70
4347.239		Fe I	2
4347.310		Gd II	103
4347.316		Al II	70
4347.425		O II	16
4347.490		Pr II	30
4347.785		Al II	70
4347.801		Sm II	37
4347.802		Al II	70
4347.854		Fe I	828
4348.11		A II	7
4348.36		N III	10
4348.64	P	Zr II	132
4348.939		Fe I	414
4349.28	P	Fe II	202
4349.426		O II	2
4349.789		Ce II	59
4349.97		V II	36
4350.465		Sm II	46
4350.52		Hf II	72
4350.834		Ti II	94
4351.051		Cr I	22
4351.269		O II	16
4351.295		Nd II	10
4351.37	P	Fe I	691
4351.549		Fe I	413
4351.764		Fe II	27
4351.770		Cr I	22
4351.849		Pr II	23
4351.8941		Mg I	14
4351.9056		Mg I	14
4352.1		C I	15
4352.101		Sm II	
4352.23		A II	1
4352.25		As II	7
4352.68	P	Cr II	37
4352.70		Fe III	4
4352.733		Ce II	220
4352.737		Fe I	71
4352.872		V I	5
4353.60		O II	76
4353.66		N III	10
4353.983		Cr I	198
4354.064		Ti I	204
4354.28	P	Fe I	975
4354.358		Fe II	213
4354.40		La II	58
4354.540		Mg I	13
4354.56		S III	7
4354.609		Sc II	14
4354.979		V I	103
4355.03	P	Fe II	202
4355.09		Eu II	22
4355.096		Ca I	37
4355.308		Ti I	174
4355.911		Ni I	149
4355.943		V I	5
4356.711		Al II	60
4356.760		Cr I	130
4356.807		Al II	60
4357.24	P	Al III	9
4357.25		O II	18,63,64
4357.50	P	Fe I	1170
4357.525		Cr I	198
4357.53	P	Fe I	994
4357.574		Fe II	
4357.85	P	Ni I	256
4358.169		Nd II	10
4358.27		N I	
4358.343		Hg I	1
4358.40		O II	64
4358.505		Fe I	412
4358.53		A II	87
4358.66		Cr I	176
4358.699		Nd II	57
4358.73		Y II	5
4358.95	P	Fe I	987
4359.12	P	Fe II	202
4359.152		Gd II	47,68
4359.38		O II	26
4359.585		Ni I	86
4359.631		Cr I	22
4359.636		Gd II	67
4359.74		Zr II	79
4359.795		Pr II	26
4359.929		Tm I	1
4359.992		Cr I	198
4360.03	P	Fe II	148
4360.16		Ce II	245
4360.487		Ti I	204
4360.49		S II	
4360.690		Be II	4
4360.720		Sm II	23
4360.80		Zr I	31
4360.813		Fe I	903
4360.917		Gd II	16
4361.025		Be II	4
4361.031		Co I	1
4361.249		Fe II	
4361.53		S III	4
4361.661		Ce II	157
4361.710		Sr I	6
4361.85		C III	
4361.913		Co I	1
4362.040		Sm II	45
4362.07		A II	39
4362.10		Ni II	9
4362.93		Cr II	179
4362.95		Cr I	82
4363.05		La II	133
4363.134		Cr I	103
4363.30		Cl I	8
4363.525		V I	23
4363.644		Mo II	3
4364.01		Y II	70
4364.14		Cr I	130
4364.140		Gd II	33
4364.17		Y II	70
4364.59		Al III	9
4364.658		Ce II	135
4364.66		La II	53
4364.73		S III	7
4364.87		Cr I	153
4364.89	P	Fe II	202
4365.56		Fe III	4
4365.72		Ne II	57
4365.745		V I	79
4365.902		Fe I	415
4366.165		Fe II	216
4366.315		Nd II	12
4366.33		Cr I	153
4366.45		Zr I	61
4366.896		O II	2
4366.91		V II	36
4367.07	P	Fe I	1170
4367.36	P	Ni I	88
4367.581		Fe I	414
4367.657		Ti II	104
4367.87		A II	98
4367.90		Hf II	15
4367.906		Fe I	41
4367.966		Cb II	8
4368.031		Sm II	37
4368.042		V I	5
4368.14		C II	45
4368.14		C III	
4368.20	P	Cr II	37
4368.234		Ce II	227
4368.252		Cr I	130
4368.262		Fe II	
4368.30		O I	5
4368.312		Ni I	102
4368.327		Pr II	5
4368.632		Nd II	11
4368.66	P	Fe I	644
4368.67	P	V II	188
4368.89		Cr I	198
4368.941		Ti I	245
4369.28		O II	26
4369.29	P	Fe I	1244
4369.404		Fe II	28
4369.52		Cl I	8
4369.61	P	Fe II	148
4369.682		Ti I	290
4369.73	P	Fe I	976
4369.77		Ne II	56
4369.771		Gd II	15
4369.774		Fe I	518
4370.041		Ni I	149
4370.27		V II	31
4370.76		A II	39
4370.875		Mn I	17
4370.95		Hf II	26
4370.96		Zr II	79
4371.00	P	Fe I	69
4371.069		Nd II	57
4371.10		Fe III	4
4371.130		Co I	93
4371.17	P	V II	36
4371.279		Cr I	22
4371.28	P	Cr I	304
4371.33		C I	14
4371.36		A II	1
4371.59		C II	45
4371.65		O II	76
4372.09		A II	86
4372.208		Ru I	13
4372.22	P	Fe II	33
4372.383		Ti I	277
4372.4		Fe III	122
4372.401		Ce II	169
4372.49		C II	45
4372.50		A II	63
4372.88	P	V II	13
4372.91		Cl II	52
4372.994		Fe I	473
4373.230		V I	140
4373.254		Cr I	22
4373.462		Sm II	42
4373.563		Fe I	214,413
4373.656		Cr I	304
4373.818		Ce II	202
4373.90	P	Fe I	904
4374.158		Cr I	104
4374.243		Gd II	83
4374.28		C II	45
4374.455		Sc II	14
4374.495		Fe I	648
4374.61	P	Cr II	179
4374.825		Ti II	93
4374.87		A II	77
4374.918		Co I	150
4374.923		Nd II	15
4374.94		Y II	13
4375.00		N II	16
4375.039		Nd II	8
4375.304		V I	140
4375.333		Cr I	103
4375.35	P	Ti II	104
4375.425		Ti I	219
4375.48	P	Fe I	797
4375.540		Co I	143
4375.918		Ce II	134
4375.932		Fe I	2
4375.96		A II	17
4376.78		C II	46
4376.782		Fe I	471,904
4376.798		Cr I	304
4377.330		Fe I	990
4377.549		Cr I	83
4377.765		Mo II	3
4377.796		Fe I	645
4377.95		Ne II	65
4378.01		O II	102

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4378.10		La II	77	4391.84		S II	43	4406.67		Gd II	103
4378.236		Sm II	53	4391.87	P	Fe I	992	4407.278		Ce II	64
4378.41		O II	102	4391.94		Ne II	57	4407.637		V I	22
4378.73	P	Fe I	759	4392.074		V I	23	4407.678		Ti II	51
4379.09		N III	17	4392.26		Cr I	130	4407.714		Fe I	68
4379.238		V I	22	4392.31	P	Fe I	757	4407.72		Cr I	129
4379.25		A II	63	4392.58		Fe I	973	4407.911		Be I	4
4379.50		Ne II	56	4393.03	P	Fe I	473	4408.204		V I	22
4379.74		A II	7	4393.45		Na I	17	4408.248		Gd II	44
4379.78		Zr II	88	4393.534		Cr I	102	4408.419		Fe I	68
4379.782		Cr I	130	4393.70	P	Fe I	899	4408.511		V I	22
4379.90		Cl I	7	4393.835		V I	40	4408.844		Pr II	4
4379.97		C III	14	4393.925		Ti I	244	4408.92		V II	224
4380.060		Ce II	155	4394.057		Ti II	51	4409.123		Fe I	645
4380.38		Mg I	12	4394.31	P	Fe I	975	4409.22		Ti II	61
4380.55		Cr I	130	4394.65		A II	87	4409.30		Ne II	57
4380.642		Gd II	68	4394.719		Gd II	44	4409.519		Ti II	61
4381.04		V I	23	4394.779		Ce II	259	4409.84		Mg I	48
4381.112		Cr I	64	4394.83		Cr I	130	4410.026		Ru I	5
4381.290		Nd II	56	4394.855		Ti I	78	4410.06		C II	40
4381.79	P	Fe II	9	4394.94		Zr I	61	4410.304		Cr I	129
4382.02	P	Fe I	938	4395.031		Ti II	19	4410.516		Ni I	88
4382.061		Gd II	46	4395.228		V I	22	4410.641		Ce II	33
4382.167		Ce II	2	4395.288		Fe I	828	4410.967		Cr I	102
4382.31		Fe III	4	4395.417		Cr I	129	4411.052		Nd II	8
4382.33	P	V II	36	4395.514		Fe I	991,992	4411.080		Ti II	115
4382.777		Fe I	799a	4395.78		Fe III	4	4411.093		Cr I	129
4382.853		Cr I	64	4395.788		Pr II	29	4411.20		C II	39
4382.95		Zr II	109	4395.848		Ti II	61	4411.21		La II	138
4383.10		Zr II	97	4395.95		O II	26	4411.34		S I	5
4383.119		Gd II	67	4397.251		Cr I	129	4411.52		C II	39
4383.17		Eu II	27	4397.27	P	Fe II	33	4411.786		Co I	27
4383.24		C III	14	4397.37		Ti IV		4411.878		Mn I	
4383.44		La II	76	4397.51		Gd II		4411.936		Ti II	61
4383.547		Fe I	41	4397.94		Ne II	56	4412.155		Pr II	8
4383.79		A II	16	4398.02		Y II	5	4412.250		Cr I	22
4384.08		Ne II	60	4398.314		Ti II	61	4412.265		Nd II	9
4384.13	P	Fe I	1101	4398.52		V II	187	4412.43	P	Fe I	69
4384.33	P	Fe II	32	4398.625		Ni I	102	4412.436		Ti I	54
4384.543		Ni I	86	4398.787		Ce II	81	4412.54		Ne II	55
4384.6	P	Ni II	10	4399.14		Cl II	46	4413.04		Zr I	61
4384.643		Mg II	10	4399.203		Ce II	81	4413.20		Ne II	57,65
4384.682		Fe I	474	4399.44		Zr II	67	4413.40	P	Fe I	1046
4384.722		V I	5,22	4399.607		Ni I	196	4413.600		Fe II	32
4384.813		Sc II	14	4399.767		Ti II	51	4413.765		Pr II	26
4384.977		Cr I	22	4399.823		Cr I	129	4413.784		Nd II	22
4385.00		Ne II	56	4399.86	P	Fe II	20	4413.866		Cr I	234
4385.08		A II	98	4400.09		A II	1	4414.03	P	Fe I	825
4385.20		La II	75	4400.18		Gd II	67	4414.17	P	V II	13
4385.260		Fe I	415	4400.26		Ni I	146	4414.20	P	Ni I	88
4385.381		Fe II	27	4400.355		Sc II	14	4414.23	P	Fe I	475
4385.45	P	V II	30	4400.575		V I	22	4414.29		P II	25
4385.663		Nd II	50	4400.63	P	Ti II	93	4414.37		O II	60
4386.434		Tm I	1	4400.828		Nd II	10	4414.432		Nd II	3
4386.461		Ni I	168	4400.870		Ni I	149	4414.47	P	Fe I	643
4386.57	P	Fe II	26	4401.02		A II	1	4414.54		Zr II	79
4386.6		Fe I	899	4401.293		Fe I	828	4414.879		Mn I	22
4386.835		Ce II	57	4401.35		Zr II	68	4414.909		O II	5
4386.858		Ti II	104	4401.447		Fe I	350	4415.125		Fe I	41
4387.213		V I	40	4401.547		Ni I	86	4415.37		S II	53
4387.380		Cr I	84	4401.74		A II	76	4415.559		Sc II	14
4387.496		Cr I	103	4401.97		P II	24	4416.474		V I	22
4387.674		Gd II	15	4402.86		S II	43	4416.535		Ti I	161
4387.897		Fe I	476	4402.875		Fe II		4416.77		Ne II	61
4387.928		He I	51	4403.03		Cl I	6	4416.817		Fe II	27
4388.007		Ce II	5	4403.35		Zr II	79	4416.975		O II	5
4388.077		Ti I	219	4403.360		Sm II	22	4417.274		Ti I	161
4388.16		K II	7	4403.372		Cr I	128	4417.31		P II	24
4388.24		C III	14	4403.498		Cr I		4417.37		Hf II	51
4388.412		Fe I	830	4403.54		Ti IV		4417.398		Co I	150
4388.50		Zr II	140	4403.605		Pr II	34	4417.718		Ti II	40
4389.12	P	V II	13	4404.10	P	Fe I	987	4418.340		Ti II	51
4389.244		Fe I	2	4404.276		Ti I	218,219	4418.432		Fe I	412
4389.76		Cl I	7	4404.397		Ti I	78	4418.60	P	Fe I	899
4389.870		Ni I	87	4404.68		V II	30	4418.784		Ce II	2
4389.974		V I	22	4404.752		Fe I	41	4418.84		S III	4
4390.14		Na I	17	4404.81		Zr II	118	4419.032		Gd II	15
4390.322		Ni I	136	4404.911		Ti I	161	4419.10		Cr I	128
4390.460		Fe I	413	4404.932		Co I	127	4419.16		La II	89
4390.585		Mg II	10	4405.011		V I	23	4419.30	P	Fe I	893
4390.858		Sm II	15	4405.02	P	Fe I	2	4419.59		Fe III	4
4390.953		Gd II	32	4405.23		Ba II	16	4419.78	P	Fe I	644
4390.954		Fe I	414	4405.40	P	Fe I	991	4419.935		V I	21
4390.977		Ti II	61	4405.694		Ti I	78	4419.94		Na I	16
4391.110		Nd II	24	4405.849		Pr II	4	4420.45		Zr I	61
4391.114		Th II	6	4406.02		O II	26	4420.468		Os I	1
4391.26		Fe III	42	4406.147		V I	40	4420.526		Sm II	32
4391.568		Co I	150	4406.22	P	V II	30	4420.665		Sc II	14
4391.661		Ce II	81	4406.26		Cr I	152	4420.75	P	Fe II	9
4391.753		Cr I	22	4406.641		V I	22	4420.90		A II	1

I A	Type	Element	Multiplet No.
4421.138		Sm II	37
4421.231		Pr II	13
4421.24		Gd II	103
4421.337		Co I	150
4421.38		Ne II	66
4421.573		V I	22
4421.754		Ti I	218
4421.949		Ti II	93
4422.477		V I	79
4422.570		Fe I	350
4422.59		Y II	5
4422.697		Cr I	234
4422.76		Hf II	103
4422.823		Ti I	78
4422.882		Fe I	646
4423.000		Ni I	168
4423.145		Fe I	412
4423.212		V I	40
4423.22	P	Ti II	61
4423.31		Na I	16
4423.318		Cr I	128
4423.678		Ce II	21
4423.73		K II	5
4423.858		Fe I	830
4423.9		P II	31
4424.075		Cr I	82
4424.102		Gd II	67
4424.194		Fe I	757
4424.281		Cr I	129
4424.339		Sm II	45
4424.401		Ti I	243
4424.62	P	V II	30
4424.84		Ni I	262
4425.129		Cr I	152
4425.441		Ca I	4
4425.662		Fe I	798
4425.75	P	Fe I	555
4425.79	P	Fe I	899
4425.840		Ti I	78
4425.95		P II	24
4426.005		V I	22
4426.01		A II	7
4426.054		Ti I	161
4426.151		Gd II	14
4426.18		Hf II	87
4427.098		Ti I	128
4427.12	P	Ti I	78
4427.21		N II	56
4427.30	P	Fe I	828
4427.312		Fe I	2
4427.52		La II	76
4427.606		Gd II	66
4427.71		Cr I	129
4427.90	P	Ti II	61
4427.917		Ce II	171
4427.97		N II	55
4427.995		Mg II	9
4428.501		Cr I	129
4428.515		V I	21
4428.54		Ne II	57,61
4428.57	P	Fe I	973
4428.74	P	Fe I	899
4429.11	P	V II	13
4429.20	P	Fe I	987
4429.238		Pr II	2,4
4429.270		Ce II	19
4429.32		Fe I	972
4429.34		Zr II	118
4429.60		Ne II	74
4429.796		V I	22
4429.90		La II	38
4429.938		Cr I	234
4430.023		Ti I	267
4430.18		A II	7
4430.197		Fe I	472
4430.366		Ti I	113
4430.486		Cr I	234
4430.51	P	Cr I	128
4430.618		Fe I	68
4430.90		Ne II	56
4430.95		Fe III	4
4431.02		A II	1
4431.02		S II	32
4431.284		Ti I	218
4431.369		Sc II	14
4431.48		Zr I	61
4431.608		Co I	143
4431.626		Fe II	222
4431.67		Ne II	74
4431.82		N II	55
4431.922		Mn I	40
4432.089		Ti II	51
4432.175		Cr I	81
4432.26		Ne II	74
4432.41		S II	43
4432.572		Fe I	797
4432.739		N II	55
4432.80	P	Fe I	471
4432.82		Al II	84
4432.90	P	Fe I	271
4432.95		La II	11
4433.223		Fe I	830
4433.39	P	Fe I	412
4433.48		N II	55
4433.501		Mo II	3
4433.578		Ti I	267
4433.635		Gd II	82
4433.793		Fe I	825
4433.83		A II	123
4433.885		Sm II	41
4433.968		Cr I	128
4433.991		Mg II	9
4434.003		Ti I	113,161
4434.323		Sm II	36
4434.75		Cr I	128
4434.960		Ca I	4
4435.151		Fe I	2
4435.58		Eu II	4
4435.688		Ca I	4
4435.84		La II	8
4436.025		Mn I	40
4436.138		V I	21
4436.225		Gd II	117
4436.352		Mn I	22
4436.48		Mg II	19
4436.586		Ti I	160
4436.64		Ti I	267
4436.931		Fe I	516
4436.981		Ni I	86
4437.549		He I	50
4437.570		Ni I	168
4437.612		Ce II	169
4437.837		V I	21
4438.044		Sr I	6
4438.12		A II	123
4438.13		Gd II	67
4438.232		Ti I	218
4438.266		Gd II	44
4438.353		Fe I	828
4438.48		Cl I	6
4438.53	P	Fe I	969
4439.13	P	Fe II	32
4439.30		Ne II	65
4439.42		V II	46
4439.45		A II	127
4439.643		Fe I	515
4439.87		S III	7
4439.883		Fe I	116
4439.95		Ne II	61
4440.09		A II	76,127
4440.1		O III	33
4440.345		Ti I	159
4440.41		V II	224
4440.45		Zr II	79
4440.479		Fe I	829
4440.840		Fe I	992
4440.883		Ce II	238
4440.972		Fe I	645
4441.272		Ti I	160
4441.56	P	Fe I	987
4441.683		V I	21
4441.73	P	Ti II	40
4441.81		C IV	4
4441.99		N II	55
4442.268		Cr I	102
4442.343		Fe I	68
4442.441		Ni I	87
4442.50		Zr II	53
4442.67		Ne II	56
4442.72	P	Ce II	19
4442.835		Fe I	69
4442.99		Zr II	88
4443.05		O II	35
4443.07		Hf II	
4443.197		Fe I	350
4443.707		Cr I	234
4443.743		Ce II	171
4443.802		Ti II	19
4443.94		La II	133
4444.20	P	V II	30
4444.207		V I	21
4444.259		Sm II	
4444.267		Ti I	218
4444.393		Ce II	19
4444.559		Ti II	31
4444.563		Fe II	201
4444.704		Ce II	
4445.26	P	Fe II	9
4445.48		Fe I	2
4445.711		Co I	150
4445.77	P	V II	13
4445.88		Zr II	96
4446.248		Fe II	187
4446.387		Nd II	49
4446.46		Ne II	56
4446.487		Gd II	14
4446.71		F II	10
4446.842		Fe I	828
4446.90	P	Fe I	596
4447.033		N II	15
4447.134		Fe I	69
4447.18		F II	10
4447.722		Fe I	68
4447.8		Al II	83
4447.82	P	O III	33
4448.21		O II	35
4448.47		A II	127
4448.88		A II	127
4448.97	P	Fe I	891
4449.143		Ti I	160
4449.336		Ce II	202
4449.573		V I	62
4449.663		Fe II	222
4449.867		Pr II	4
4449.985		Ti I	159
4450.13		Ni I	178
4450.301		Ni I	236
4450.320		Fe I	476
4450.487		Ti II	19
4450.732		Ce II	3
4450.77	P	Fe I	972
4450.896		Ti I	160
4451.545		Fe II	
4451.566		Nd II	50
4451.586		Mn I	22
4451.61	P	V II	30
4451.978		Nd II	6
4452.008		V I	87
4452.32	P	Fe I	898
4452.377		O II	5
4452.45		P II	31
4452.62	P	Fe I	969
4452.70		Hf II	94
4452.727		Sm II	26
4453.005		Mn I	22
4453.312		Ti I	113
4453.35		V II	199
4453.708		Ti I	160
4453.931		Gd II	64
4454.382		Pr II	5
4454.383		Fe I	350
4454.629		Sm II	49
4454.655		Fe I	902
4454.781		Ca I	4
4454.80		Zr II	40
4455.012		Mn I	28
4455.032		Fe I	974
4455.258		Fe II	
4455.318		Mn I	28
4455.321		Ti I	113
4455.45		Cr I	127
4455.79		La II	53
4455.821		Mn I	28
4455.85	P	Fe II	140
4455.887		Ca I	4
4456.331		Fe I	516
4456.394		Nd II	50
4456.43		S II	43
4456.53		V II	199
4456.612		Ca I	4
4456.63	P	Fe I	973
4456.650		Ti II	115
4456.84	P	Cr II	16
4456.95		Ne II	61
4457.045		Mn I	28
4457.179		Nd II	18
4457.42		Zr II	79
4457.428		Ti I	113
4457.479		V I	21
4457.549		Mn I	28

4282.90 4284.128 Fe I 41 4000.441

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4457.759		V I	101	4467.98		P II	25	4481.056		Gd II	44
4458.101		Fe I	992	4468.010		V I	87	4481.129		Mg II	4
4458.262		Mn I	28	4468.38		Cr I	127	4481.21		La II	146
4458.336		Pr II	8	4468.493		Ti II	31	4481.23		Ni I	168
4458.517		Sm II	7	4468.712		Pr II	20	4481.261		Ti I	146
4458.538		Cr I	127	4468.759		V I	102	4481.273		Tm II	1
4459.037		Ni I	86	4468.91		Ne II	61	4481.327		Mg II	4
4459.121		Fe I	68	4469.160		Ti II	18	4481.44		Cr I	270
4459.34		Cr I	63	4469.32		O II	59,94	4481.621		Fe I	827
4459.738		Cr I	127	4469.37		Cl I	15	4481.83		A II	39
4459.760		V I	21	4469.381		Fe I	830	4482.02		Cl II	85
4459.96		N II	21	4469.547		Co I	150	4482.04		Zr II	131
4460.12	P	Fe I	271	4469.710		V I	87	4482.171		Fe I	2
4460.16	P	V I	62	4469.850		Ce II	230	4482.257		Fe I	68
4460.213		Ce II	2	4469.92	P Forb	He I	15	4482.40	P	Ti II	30
4460.292		V I	21	4470.138		Mn I	22	4482.688		Ti I	113
4460.377		Mn I	28	4470.39	P	V II	30	4482.750		Fe I	828
4460.55	P	Fe I	1100	4470.483		Ni I	86	4482.878		Cr I	197
4460.56		A II	1	4470.864		Ti II	40	4483.328		Gd II	62
4460.769		Cr I	63	4471.238		Ti I	146	4483.424		S II	43
4461.085		Mn I	28	4471.240		Ce II	8	4483.50		V II	224
4461.138		Ce II	10	4471.29		Gd II	82	4483.67		P II	25
4461.205		Fe I	471	4471.477		He I	14	4483.78	P	Fe I	898
4461.22		Zr II	67	4471.52		Ne II	65	4483.900		Ce II	3
4461.37		Fe I	725	4471.550		Co I	150	4483.918		Co I	150
4461.43	P	Fe II	26	4471.68	P	Fe I	2	4484.227		Fe I	828
4461.56		O III	33	4471.688		He I	14	4484.513		Co I	27
4461.654		Fe I	2	4471.81	P	Fe I	972	4484.54		Ni I	102
4461.80	P	Fe I	412	4472.09		Ca II	6	4484.68		Cr I	151
4461.989		Fe I	471,825,902	4472.52	P	Fe I	39	4484.93	P	Fe II	9
4462.022		Mn I	28	4472.57	P	Fe I	411	4485.013		Ti I	184
4462.099		Ti I	8	4472.721		Fe I	595,900	4485.15		Eu II	26
4462.20	P	Fe I	824	4472.792		Mn I	22	4485.44		Zr II	79
4462.363		V I	87	4472.921		Fe II	37	4485.679		Fe I	830
4462.407		Nd II	54	4473.015		Sm II	26	4485.97	P	Fe I	825
4462.460		Ni I	86	4473.782		Cr I	63	4486.14		Hf II	23
4462.76	P	V II	13	4474.03		La II	133	4486.352		Gd II	135
4462.774		Cr I	127	4474.045		V I	110	4486.65		Hf II	107
4462.90		Fe III	106	4474.194		Fe II	171	4486.66		S II	43
4462.95		P II	25	4474.714		V I	101	4486.909		Ce II	57
4462.985		Nd II	50	4474.77		A II	38	4487.01	P	Fe I	988
4463.14	P	Fe I	471	4474.852		Ti I	113,184	4487.28		Y I	14
4463.16	P	Fe I	901	4474.95		O III	37	4487.36	P	Fe I	824
4463.247		Gd II	83	4475.19	P	Ti I	184	4487.46		B III	2
4463.391		Ti I	160	4475.20	P	Cr I	63	4487.46		Cr I	63
4463.410		Ce II	20	4475.22		Ne II	65	4487.47		Y I	14
4463.427		Ni I	102	4475.24		V II	198	4487.72		O II	104
4463.539		Ti I	160	4475.27		P II	24	4487.74	P	Fe I	594
4463.582		S II	43	4475.28		Cl II	41,85	4487.821		Pr II	3
4464.32		V II	199	4475.31		Cl I	7	4488.051		Cr I	293
4464.425		S II		4475.345		Cr I	95	4488.09		O II	104
4464.458		Ti II	40	4475.518		Ti I	184	4488.140		Fe I	819
4464.669		Cr I	127	4475.70		V II	199	4488.15		N II	21
4464.677		Mn I	22	4475.72		Y I	14	4488.27	P	Ti I	184
4464.69	P	Fe I	555	4475.99	P	Fe I	899	4488.319		Ti II	115
4464.747		V I	110	4476.021		Fe I	350	4488.401		Gd II	82
4464.773		Fe I	472	4476.08		O II	87	4488.898		V I	86,110
4464.907		Cr I	127	4476.082		Fe I	830	4488.917		Fe I	213,827
4464.97		Eu II	27	4476.61	P	Ti I	184	4489.089		Ti I	146
4465.075		Nd II	5	4477.02		Cr I	63	4489.185		Fe II	37
4465.15		Cr I	267	4477.45		Y I	14	4489.471		Cr I	
4465.33	P	Fe I	1099	4477.74		N II	21	4489.48		O II	86
4465.357		Cr I	127	4477.88		O II	88	4489.741		Fe I	2
4465.4		Y II	81	4478.03	P	V II	13	4489.87		Al II	107
4465.40		O II	94	4478.040		Fe I	69	4490.00		Cl II	41
4465.54		N II	21	4478.319		Co I	150	4490.081		Mn I	22
4465.601		Nd II	13	4478.48		S III	7	4490.084		Fe I	469
4465.78		Cr II	191	4478.657		Sm II		4490.24	P	Fe I	319
4465.807		Ti I	146	4478.795		Gd II	15	4490.541		Ni I	134,235
4466.11		P II	24	4479	P	N IV	6	4490.56		Cr I	267
4466.13	P	Cr I	34	4479.00	P	Fe I	987	4490.60		Hf II	74
4466.165		Cr I	127	4479.01	P	Fe I	899	4490.63	P	Fe I	891
4466.183		Fe I	901	4479.29		Ca II	6	4490.773		Fe I	974,974
4466.32		O II	87	4479.359		Ce II	203	4490.815		V I	86
4466.394		Ni I	168	4479.432		Ce II	124	4490.90	Forb	Al III	7
4466.41		Hf II	72	4479.612		Fe I	828,848	4490.99		A II	39
4466.547		Gd II	44	4479.724		Ti I	146	4491.10	P	Ce II	19
4466.554		Fe I	350	4479.891		Al III	8	4491.164		V I	62
4466.57	P	Fe I	2	4479.968		Al III	8	4491.25		O II	86
4466.65		K II	6	4479.97	P	Fe I	974	4491.401		Fe II	37
4466.881		Co I	150	4480.142		Fe I	515	4491.678		Cr I	95
4466.939		Fe I	992	4480.263		Cr I	197	4491.858		Cr I	83
4467.227		Gd II	82	4480.27	P	Fe I	823	4492.312		Cr I	197
4467.342		Sm II	53	4480.350		Cu I	8	4492.3		S II	58
4467.36		Fe III	106	4480.46	P	Fe II	20	4492.40		N I	
4467.446		Fe I	1048	4480.570		Ni I	211	4492.427		Pr II	23
4467.537		Ce II	17	4480.600		Ti I	146	4492.540		Ti I	184
4467.561		Cr I	127	4480.687		Fe II		4492.693		Fe I	969
4467.83		S III	7	4480.85		A II	104	4492.98	P	Fe I	639
4467.88		O II	94	4481.04	P	Fe I	893	4493.37	P	Fe I	796

I A	Type	Element	Multiplet No.
4493.53		Ti II	18
4493.579		Fe II	222
4494.05	P	Fe I	973
4494.180		Na I	15
4494.41		Zr II	130
4494.47	P	Fe I	411
4494.568		Fe I	68
4494.67		N I	
4494.71		La I	11
4494.746		Co I	168
4494.853		Gd II	14
4495	P	N IV	6
4495.006		Ti I	
4495.04		Cr I	101
4495.275		Cr I	275
4495.386		Fe I	319,970
4495.389		Ce II	154
4495.44		Zr II	79
4495.46	P	Ti II	40
4495.52	P	Fe II	147
4495.566		Fe I	827
4495.9		S II	48
4495.986		Fe I	825
4496.062		V I	110
4496.146		Ti I	146
4496.245		Ti I	8
4496.429		Pr II	4,25
4496.75	P	Ti I	184
4496.862		Cr I	10
4496.864		V I	86
4496.96		Zr II	40
4496.989		Mn II	17
4497.30		Cl II	41,85
4497.58		B III	3
4497.657		Na I	15
4497.709		Ti I	184
4497.849		Ce II	19
4497.88		S II	53
4498.276		Gd II	31
4498.54	P	Fe I	988
4498.55		A II	136
4498.730		Cr I	81
4498.76		La II	94
4498.897		Mn I	22
4498.94		Ne II	64
4499.18		P II	11
4499.29		S III	7
4499.475		Sm II	23
4500.295		Cr I	150
4500.32	P	Ti II	18
4500.86	P	V II	30
4501.112		Cr I	81
4501.256		V I	86
4501.270		Ti II	31
4501.692		Ni I	115
4501.788		Cr I	81
4501.808		Nd II	53
4501.972		V I	62
4502.16		La II	154
4502.220		Mn I	22
4502.52		Ne II	56
4502.592		Fe I	796
4502.95		A II	63
4503.05		Cr I	310
4503.13	P	V II	13
4503.762		Ti I	184
4504.23	P	Fe I	988
4504.27		Cl II	41
4504.52	P	Cr II	16
4504.838		Fe I	555
4505.00		Ca I	24
4505.22		Cr I	151
4505.33		K II	4
4505.715		Ti I	184
4505.75		Nd II	3
4505.95		Y I	14
4505.997		Cu II	1
4506.302		Ni I	133
4506.333		Gd II	44
4506.50		O II	
4506.582		Nd II	7
4506.624		Ca I	24
4506.74	P	Ti II	30
4506.853		Cr I	288
4506.931		Gd II	13
4507.11		Zr I	31
4507.19	P	Cr II	16
4507.195		Fe II	213
4507.417		Ca I	24
4507.559		N II	21
4507.854		Ca I	24
4507.95		Cr I	267
4508.083		Ce II	153
4508.21		Ne II	68
4508.26	P	Fe II	222
4508.283		Fe II	38
4508.48		La II	52
4509.0		S II	48
4509.082		Gd II	84
4509.13	P	Fe I	213
4509.287		V I	110
4509.306		Fe I	514,937
4509.446		Ca I	24
4510.160		Pr II	20
4510.210		Mn II	17
4510.380		Gd II	30
4510.7333		A I	9
4510.82	P	Fe I	823
4510.92		N III	3
4511.04	P	Fe I	970
4511.176		Ti I	
4511.29		Ne II	70
4511.310		In I	1
4511.37		Ne II	70
4511.82	P	Cr II	191
4511.829		Sm II	14
4511.903		Cr I	150
4512.282		Ca I	24
4512.535		Al III	3
4512.72		V II	212
4512.734		Ti I	42
4512.995		Ni I	163
4513.21		Cr I	150
4513.58		Y I	15
4513.715		Ti I	112
4513.72	P	Fe I	213
4513.89		Cr I	175
4513.90	P	Ni I	131
4514.189		Fe I	514
4514.191		V I	110
4514.373		Cr I	287
4514.505		Gd II	103
4514.531		Cr I	95
4514.80		Ne II	55
4514.89		N III	3
4515.094		Sm II	
4515.17	P	Fe I	319
4515.19	P	Fe II	20
4515.337		Fe II	37
4515.440		Cr I	126
4515.558		V I	100
4515.610		Ti I	184
4516.02		C III	9
4516.08	P	Fe I	639
4516.27	P	Fe I	819
4516.38		La II	
4516.45	P	Fe I	825
4516.56	P	Cr II	191
4516.93		C III	9
4517.094		Co I	150
4517.10		Gd II	135
4517.35		V II	211
4517.43	P Forb	He I	13
4517.530		Fe I	472
4517.595		Pr II	2
4517.60	P	Fe I	992
4517.79		Ne II	55
4517.81		Ni I	103
4518.022		Ti I	42
4518.18		N III	3
4518.30	P	Ti II	18
4518.38		V II	212
4518.45		Fe I	593
4518.58	P	Fe I	69
4518.58		Lu I	
4518.63		Cr I	34,100
4518.700		Ti I	112
4518.9		S II	47
4519.02		Hf II	
4519.19		Cl II	41
4519.633		Sm II	49
4519.83		Cr I	126
4519.986		Ni I	51
4520.070		Gd II	82
4520.225		Fe II	37
4520.24	P	Fe I	471
4520.37	P	Ti II	30
4521.141		Cr I	277,287
4521.296		Gd II	44
4521.65	P	Fe I	641
4521.924		Ni I	116
4521.94		Gd II	135
4522	P	O V	15
4522.00		Cr I	173
4522.3238		A I	7
4522.37		La II	8,74
4522.59		Eu II	4
4522.634		Fe II	38
4522.66		Ne II	68
4522.798		Ti I	42
4522.82		Gd II	103
4523.037		Sm II	3
4523.077		Ce II	2
4523.403		Fe I	829
4523.60		N III	3
4523.74	P	Ni I	99
4523.912		Sm II	41
4524.218		V I	99
4524.344		Mo I	6
4524.68		S II	40
4524.732		Ti II	60
4524.74		Hf II	104
4524.744		Sn I	5
4524.81	P	V II	212
4524.841		Cr I	276
4524.928		Ba II	3
4524.946		S II	40
4525.142		Fe I	826
4525.15	P	Fe I	819
4525.168		V I	110
4525.21	P	Ti II	18
4525.31		La II	76
4525.75	P	Fe II	9
4525.875		Fe I	319
4526.108		Cr I	196
4526.12		La II	50
4526.20		Cl I	15
4526.374		Ti I	127,184
4526.40	P	Fe I	969
4526.466		Cr I	33
4526.563		Fe I	471
4526.565		Tm II	1
4526.58	P	Fe II	171
4526.794		Co I	177
4526.935		Ca I	36
4527.25		Y I	14
4527.305		Ti I	42
4527.339		Cr I	33,82
4527.348		Ce II	108
4527.455		Ti I	7
4527.471		Cr I	174
4527.648		Cb II	8
4527.796		Fe I	641
4527.80		Y I	14
4527.86		N III	13
4527.90	P	Fe I	897
4527.919		Co I	156
4527.96		S III	7
4527.990		V I	
4528	P	N IV	6
4528.472		Ce II	1
4528.51		V II	56
4528.619		Fe I	68
4528.76	P	Fe I	595
4528.82	P	Fe I	468
4528.911		Al III	3
4529.08		V II	198
4529.176		Al III	3
4529.301		V I	95
4529.376		Tm II	5
4529.465		Ti II	82
4529.56	P	Fe II	171
4529.562		Fe I	987
4529.589		V I	99
4529.7		O III	32
4529.851		Cr I	33
4530.034		Mn II	17
4530.12	P	Cr I	126
4530.403		N II	59
4530.54		La II	73
4530.57		A II	35
4530.688		Cr I	33
4530.755		Cr I	33
4530.78		P II	25,35
4530.785		Cu I	8
4530.84		N III	3
4530.949		Co I	150
4531.152		Fe I	39
4531.60	P	Ti I	112
4531.633		Fe I	555,847,992

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4531.82		Cr I	275	4545.335		Cr I	33	4561.03		A II	51
4532.188		V II	212	4545.394		V I	109	4561.20		Cr I	34
4532.75		Cr I	212	4545.49	P	Cr II	16	4561.461		Pr II	23
4533.143		Fe I	641	4545.54	P	Fe I	894	4561.54		Cr I	277
4533.18		Hf II	25	4545.956		Cr I	10	4561.88		S II	
4533.238		Ti I	42	4545.985		Co I	142	4562.05		Ne II	64
4533.3		S II	47	4546.36		N III	13	4562.360		Ce II	1
4533.81		P II	25	4546.47	P	Fe I	1047	4562.5		La II	161
4533.966		Ti II	50	4546.68	P	Fe I	989	4562.637		Ti I	7
4533.985		Co I	150	4546.930		Ni I	261	4563.245		Cr I	246
4534.154		Pr II	20	4547.022		Fe I	39	4563.427		Ti I	266
4534.166		Fe II	37	4547.234		Ni I	146	4563.657		Cr I	172
4534.26		Mg II	26	4547.34		N III	3	4563.761		Ti II	50
4534.57		N III	3	4547.78		A II	76	4563.78		A II	
4534.62	P	Fe I	1169	4547.850		Ti I	270	4564.166		Cr I	312
4534.66		Ne II	58	4547.851		Fe I	755	1564.216		Ti I	112
4534.782		Ti I	42	4548.094		Ti I	270	4564.43		A II	85
4535.11		N III	13	4548.764		Ti I	42	4564.592		V II	56
4535.146		Cr I	33	4549.214		Fe II	186	4564.715		Fe I	823
4535.215		V II	210	4549.467		Fe II	38	4564.78		N II	14
4535.38		Hf II	72	4549.50		La I	11	4564.832		Fe I	472
4535.47		Ne II	55	4549.547		S II		4565.13	P	Ni I	88
4535.50		Fe III		4549.622		Ti II	82	4565.22		P II	36
4535.51		A II	86	4549.644		V I		4565.324		Fe I	641
4535.574		Ti I	42	4549.658		Co I	150	4565.43		Zr II	116
4535.721		Cr I	33,276	4549.82	P	Ti II	39	4565.45	P	Ni I	99
4535.75		Zr I	30	4550.954		Gd II	44	4565.49		Ne II	55
4535.87	P	Ti I	112	4551.236		Ni I	236	4565.512		Cr I	21
4535.920		Ti I	42	4551.297		Ce II	229	4565.578		Co I	150
4535.921		Pr II	1	4551.455		Gd II	62	4565.684		Fe I	554
4536.051		Ti I	42	4551.667		Fe I	972	4565.73		Mn I	52
4536.509		Fe I	896	4551.860		V I	82	4565.78		Cr II	39
4536.55		Cr I	190	4552.25	P	Ti II	30	4565.842		Ce II	21
4536.78		Cl II	41	4552.37		As II	4	4566.03	P	Fe I	1169
4537.663		V I	82	4552.378		S II	40,48	4566.206		Sm II	32
4537.67		A II	123	4552.453		Ti I	42	4566.520		Fe I	641
4537.677		Fe I	594	4552.536		N II	58	4566.602		Cr I	125
4537.751		Ne I	11	4552.544		Fe I		4566.68	P	Fe I	212
4537.952		Sm II	45	4552.654		S III	2	4566.990		Fe I	723
4538.20	P	Fe I	1071	4552.659		Sm II	23	4567.415		Ni I	102
4538.58	P	Fe I	972	4553.01		Zr I	31	4567.606		Nd II	49
4538.64		V II	212	4553.056		V I	133	4567.872		Si III	2
4538.73		A II	104	4553.16		Ne II	55	4567.90		La I	11
4538.764		Fe I	115	4553.175		Ni I	135	4568	P	O IV	15
4538.84		Fe I	969	4553.48	P	Fe I	472	4568.312		Ti II	60
4538.87		La II	149	4553.949		Cr I	276	4568.545		Pr II	33
4538.95	P	Fe I	1048	4553.96		Zr II	130	4568.62	P	Fe I	989
4539.096		Ti I		4554.033		Ba II	1	4568.789		Fe I	554
4539.62		Cr II	39	4554.28		O V	7	4568.842		Fe I	894
4539.755		Ce II	108	4554.467		Fe I	319	4569.01		Ne II	69
4539.788		Cr I	33	4554.509		Ru I	5	4569.06	P	Fe I	593
4540.014		V I	100	4554.81		P II	28	4569.42		Cl II	35
4540.016		Gd II	135	4554.830		Cr I	173	4569.50		O III	36
4540.376		Ne I	17	4554.989		Gd II	82	4569.530		Cr I	173
4540.483		Ti I	8	4555.02		Cr II	44	4569.644		Cr I	173
4540.502		Cr I	33	4555.069		Ti I	266	4569.82		Fe III	82
4540.71		La II	81	4555.09		Cr I	149	4569.849		Nd II	5
4540.719		Cr I	150	4555.30		Cr I	212	4570.02		La I	11
4540.873		Ti I	112	4555.30		O III	34	4570.024		Co I	178
4541.071		Cr I	33	4555.421		Cs I	2	4570.30		Cr I	125,190
4541.269		Nd II	58	4555.486		Ti I	42	4570.34		Fe III	66
4541.31		Hf II	36	4555.75	P	Fe I	640	4570.425		V I	109
4541.513		Cr I	149	4555.890		Fe II	37	4570.70		Hf II	86
4541.523		Fe II	38	4555.922		Cu II	1	4570.906		Ti I	266
4541.59		He II	2	4556.129		Fe I	410,820,974	4570.97		La II	38
4541.671		Na I	14	4556.136		Nd II	6	4570.977		Gd II	84
4541.953		Fe I	593	4556.169		Cr I	173	4570.98		Cr I	173
4542.22		Zr I	49	4556.735		Nd II	12	4571.0956		Mg I	1
4542.422		Fe I	894	4556.765		V II	198	4571.105		Cr I	125
4542.603		Nd II		4556.939		Fe I	638	4571.24	P	Cr II	16
4542.621		Cr I	149,275	4557.237		Sc I		4571.44	P	Fe I	319
4542.720		Fe I	827	4557.857		Ti I	270	4571.676		Cr I	32
4542.77	P	Cr II	16	4558.04		P II	29	4571.783		V I	109
4543.22	P	Fe I	893	4558.080		Gd II	44	4571.83		Cr I	246
4543.74		Cr I	100	4558.092		Ti I	262,263	4571.971		Ti II	82
4543.810		Co I	142	4558.108		Fe I	894,974	4572.13		Cl II	35
4543.91		A II	95	4558.46		La II	39	4572.16		Cr I	190,246
4543.948		Sm II	32	4558.46		V II	212	4572.277		Ce II	1
4544.009		Ti II	60	4558.58	P	Fe II	20	4572.671		Be I	3
4544.11		Ne II	64	4558.659		Cr II	44	4572.83	P	Cr II	16
4544.48		Cl II	48	4558.83		Cr II	44	4572.86	P	Fe I	819
4544.50	P	Fe I	970	4559.09		Fe III		4572.92		A II	94
4544.619		Cr I	33	4559.28		La II	53	4573.14		Fe III	
4544.688		Ti I	42	4559.920		Ti I	112	4573.38		Cr I	246
4544.70	P	Cr II	16	4559.945		Ni I	115	4573.63	P	Cr II	16
4544.80		N III	12	4560.096		Fe I	823	4573.81		Hf II	40
4544.961		Ce II	123	4560.26		Cr I	211	4573.993		Sc I	
4545.08		A II	15	4560.280		Ce II	8	4574.03		Ni I	87
4545.144		Ti II	30	4560.710		V I	109	4574.240		Fe I	554
4545.218		Na I	14	4560.959		Ce II	2	4574.32		Ta I	1

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4574.45		Cr I	148	4588.217		Cr II	44	4602.005		Fe I	39
4574.49		Ne II	64	4588.40	P	Cr II	16	4602.11		O II	93
4574.49		Zr II	139	4588.730		Co I	15	4602.51		Cr I	210
4574.724		Fe I	115	4589.689		Al II	45	4602.75	P	Fe II	19
4574.777		Si III	2	4589.750		Al II	45	4602.944		Fe I	39
4574.87		La II	23	4589.76		Pr II	23	4602.99		Li I	6
4575.121		Cr I	196	4589.79		P II	24,36	4603.2	P	N V	1
4575.52		Zr I	5	4589.89		Cr II	44	4603.34	P	Fe I	348
4575.80		Fe I	593,970	4589.93		A II	31	4603.956		Fe I	410
4576.331		Fe II	38	4589.961		Ti II	50	4604.23	P	Fe I	348
4576.500		Mo I	6	4590.00	P	Cr II	16	4604.42		Zr I	29
4576.551		Ti I	262	4590.505		V II	210	4604.58		Cr I	190
4576.76		Cr I	148	4590.68		Fe III	52	4604.85	P	Fe I	846
4577.13	P	V II	56	4590.69		Cr I	125	4604.994		Ni I	98
4577.173		V I	4	4590.8		S II	47	4605.10	P	Fe I	348
4577.690		Sm II	23	4590.971		O II	15	4605.352		V II	56
4577.78	P	Fe II	54	4591.05		S II		4605.363		Mn I	
4578.139		Pr II	10	4591.220		V I	133	4605.78		La II	52
4578.334		Cr I	246	4591.26	P	Fe II	17	4605.79		Hf II	22
4578.558		Ca I	23	4591.394		Cr I	21	4605.99	P	Fe I	893
4578.728		V I	109	4591.818		Sm II	14	4606.146		V I	4
4579.05	P	Fe I	988	4591.991		V I	95	4606.231		Ni I	100
4579.07	P	Fe I	640	4592.09		Cr II	44	4606.375		Cr I	303
4579.198		V I	109	4592.529		Ni I	98	4606.402		Ce II	6
4579.344		Fe I	319,936	4592.54		Cr I	303	4606.514		Sm II	1
4579.39		A II	17	4592.655		Fe I	39	4606.59	P	V II	45
4579.446		Cb II	8	4593.195		Cs I	2	4607.08	P	Fe I	724
4579.523		Fe II		4593.44		A II	51	4607.153		N II	5
4579.59		Cr I	246	4593.47		C III		4607.331		Sr I	2
4579.68	P	Fe I	894	4593.544		Fe I	971	4607.655		Fe I	554,969
4579.825		Fe I	469	4593.544		Sm II	36	4607.94		Y II	80
4580.05		La II	53	4593.84		Cr I	190	4608.030		Gd II	144
4580.055		Fe II	26	4593.932		Ce II	6	4608.21		Cl III	13
4580.056		Cr I	10	4594.03		Eu I	1	4608.45		K II	7
4580.139		Co I	27	4594.103		V I	4	4608.908		Co I	57
4580.35		Ne II	72	4594.403		Cr I		4609.148		Nd II	3
4580.394		V I	4	4594.447		Nd II	52	4609.26	P	Ti II	39
4580.458		Ti II	60	4594.51	P	Ti I	262	4609.42		O II	93
4580.46	P	Fe I	348	4594.633		Co I	176	4609.60		A II	31
4580.600		Fe I	827	4594.908		Ni I		4609.646		V I	61
4580.619		Ni I	146	4594.959		Fe I	638	4609.7		Al II	44
4581.063		Cr I	148	4595.05		Cr I	190,211	4609.894		Cr I	303
4581.086		Gd II	44	4595.160		Mo I	6	4610.14		O II	92
4581.32		Y I	15	4595.21	P	Fe I	846	4610.59	P	Fe II	170
4581.380		Co I	156	4595.291		Sm II	45	4610.925		V I	39
4581.402		Ca I	23	4595.363		Fe I	594	4611.05	P	Fe I	641
4581.517		Fe I	555	4595.590		Cr I	286	4611.19	P	Fe I	319
4581.596		Co I	150	4595.68	P	Fe II	38	4611.25		A II	
4581.77		P II	9	4595.951		Ni I	101	4611.285		Fe I	826
4582.12	P	Fe II	19	4596.059		Fe I	820	4611.29	P	Fe I	819
4582.38		Gd II	82	4596.09		Fe III		4611.35	P	Fe I	17
4582.502		Ce II	7	4596.0970		A I	9	4611.968		Cr I	
4582.53		Gd II	65	4596.174		O II	15	4612.473		Nd II	3
4582.835		Fe II	37	4596.37		V II	210	4612.64		Fe I	349
4582.941		Fe I	348	4596.38		Cr I	210	4612.84		P II	9
4583.443		Ti II	39	4596.433		Fe I	823	4612.89		Ne II	64
4583.72	P	Fe I	472	4596.90		Cr I	171	4613.11		O II	93
4583.783		V I	109	4596.903		Co I	177	4613.210		Fe I	554
4583.829		Fe II	38	4596.978		Gd II	44	4613.373		Cr I	21
4583.89		Cr I	125	4597.013		Nd II	51	4613.38		La II	50
4583.99	P	Fe II	26	4597.06	P	Fe I	17	4613.47		S III	10
4584.095		Cr I	172	4597.91		Gd II	44	4613.67		O II	92
4584.28		Cl II		4598.122		Fe I	554	4613.74		Hf II	103
4584.445		Ru I	6	4598.33	P	Fe I	17	4613.868		N II	5
4584.732		Fe I	820	4598.37	P	Fe I	970	4613.95		Zr II	67
4584.75		Cr I	125	4598.441		Cr I	172	4614.15		Cr I	148
4584.824		Fe I	822	4598.528		Fe II	219	4614.216		Fe I	638
4584.934		Cr I	196	4598.74	P	Fe I	819	4614.523		Cr I	245
4585.03		Cl II	34	4598.77		A II	38	4614.58		Ni I	99
4585.088		Cr I	212	4598.99	P	Ti I	262	4614.73		Cr I	
4585.59	P	Fe I	468	4599.00		Cr I	171	4615.441		Sm II	49
4585.72		Cr I	211	4599.226		Ti I		4615.690		Sm II	22
4585.820		Al II	45	4599.25		Cr I	171	4615.98		Ne II	64,67
4585.871		Ca I	23	4599.46		Hf II	92	4616.137		Cr I	21
4585.923		Ca I	23	4600.104		Cr I	32	4616.64		Cr II	44
4585.94		V I	61	4600.11		Ne II	64	4616.95		Fe III	108
4586.138		Cr I	172	4600.19		V II	56	4617.269		Ti I	145
4586.25		Hf II	23	4600.28	P	Ti II	60	4617.94		Ni I	115
4586.364		V I	4	4600.372		Ni I	98	4618.12	P	V II	56
4586.95	P	Ti I	266	4600.59		La II	148	4618.52		V II	252
4586.99		Cr I		4600.752		Cr I	21	4618.568		Fe I	1151
4587.132		Fe I	795	4600.937		Fe I	591	4618.765		Fe I	409
4587.72	P	Fe I	971	4601.00		Cl I	15	4618.800		V I	39
4587.86		Cr I	125	4601.021		Cr I	32	4618.83		Cr II	44
4587.90		A II	16	4601.05		Gd II	44	4618.85		C II	50
4587.91		P II	15,35	4601.15		Cr I	172	4619.294		Fe I	821
4587.91		P III	7	4601.34	P	Fe II	43	4619.329		Co I	27
4588.082		Al II	45	4601.478		N II	5	4619.4	P	N V	1
4588.13		Ne II	68	4601.97		P II	15	4619.525		Ti I	261
4588.194		Al II	45	4601.97		Zr II	138	4619.551		Cr I	81

I A	Type	Element	Multiplet No.
4619.648		V I	
4619.771		V I	4
4619.87		La II	76
4620.13	P	Fe I	468
4620.38		Ni I	163
4620.513		Fe II	38
4621.00		Cr I	32
4621.28		O II	92
4621.39		Fe III	108
4621.392		N II	5
4621.41	P	Cr II	25
4621.63	P	Fe I	989
4621.893		Cr I	32
4621.963		Cr I	32,244
4622.40	P	Fe II	17
4622.491		Cr I	233
4622.71		Hf II	70
4622.71		P II	36
4622.761		Cr I	81
4623.020		Co I	156
4623.098		Ti I	145
4624.11		S II	
4624.404		V I	39
4624.42		Fe III	108
4624.561		Co I	141
4624.657		V I	94
4624.86		Zr II	116
4624.899		Ce II	27
4625.052		Fe I	554
4625.30		Cr I	171
4625.44	P	Fe I	974
4625.549		Fe II	219
4625.65		Cr I	244
4625.71		C II	49
4625.767		Co I	176
4625.911		Fe II	186
4625.925		Cr I	244
4626.188		Cr I	21
4626.36	P	Fe I	636
4626.467		Mo I	6
4626.480		V I	39
4626.53		Fe III	108
4626.544		Mn I	
4626.565		Tm II	
4626.61		P II	15
4626.758		Fe I	410
4626.78	P	Fe II	170
4626.81		Cr I	209
4627.02	P	Fe I	637
4627.22		Eu I	1
4627.48		V II	210
4627.66		Gd II	43
4627.85		Ne II	73
4627.86	P	Fe II	54
4628.160		Ce II	1
4628.4410		A I	9
4628.473		Cr I	186
4628.69	P	Fe I	819
4628.71		P II	28
4628.751		Pr II	1
4628.821		Fe II	219
4628.908		Co I	15
4629.07		Zr II	139
4629.29	P	Ti II	38
4629.336		Fe II	37
4629.336		Ti I	145
4629.359		Co I	156
4629.7		Al II	35
4629.814		Zn I	8
4629.90	P	Fe II	170
4629.98	P	Ni I	223
4630.125		Fe I	115
4630.52		C II	49
4630.537		N II	5
4630.785		Fe I	969
4631.03	P	Fe I	1071
4631.38		Si IV	6
4631.49		Fe I	1152
4631.5		Al II	97
4631.895		Fe II	219
4632.14	P	Fe I	754
4632.180		Cr I	171
4632.83	P	Fe I	820
4632.915		Fe I	39
4633.05	P	Fe I	17
4633.2		Al II	97
4633.286		Cr I	186
4633.764		Fe I	410
4633.99		Zr I	5
4634.11		Cr II	44
4634.16		N III	2
4634.21		V II	210
4634.59		Cr I	171
4634.60	P	Fe II	25
4634.73		Ne II	67
4634.95		La II	133
4635.176		V I	4
4635.328		Fe II	186
4635.539		Ti I	261
4635.62	P	Fe I	319
4635.7		Al II	97
4635.846		Fe I	349
4636.345		Ti II	38
4636.42		La II	101
4636.66	P	Fe I	513
4637.182		Cr I	32
4637.209		Ti I	261
4637.25		A II	31
4637.512		Fe I	554
4637.772		Cr I	32
4637.887		Ti I	261
4638.016		Fe I	822
4638.12		Si III	13
4638.854		O II	1
4639.001		Gd II	64,102
4639.150		Mn II	18
4639.326		Al II	69
4639.369		Ti I	145
4639.384		Al II	69
4639.538		Cr I	186
4639.669		Ti I	145
4639.725		Al II	69
4639.833		Al II	69
4639.944		Ti I	145
4640.062		V I	39
4640.14		Hf II	74
4640.309		V I	94
4640.362		Al II	69
4640.384		Al II	69
4640.431		Ti I	261
4640.55		Cr I	171
4640.64		N III	2
4640.67		Cr I	244
4640.735		V I	39
4641.22	P	Fe I	347
4641.77	Forb	K I	2
4641.811		O II	1
4641.90		N III	2
4642.011		Cr I	244
4642.235		Sm II	36
4642.27	Forb	K I	2
4642.58	P	Fe I	688
4643.086		N II	5
4643.20	P	Fe I	38
4643.468		Fe I	820
4643.69		Y I	4
4644.09	P	Fe II	31
4644.82		Zr I	64
4645.193		Ti I	145
4645.28		La II	8
4645.971		V I	4
4646.059		Pr II	22
4646.174		Cr I	21
4646.326		Gd II	82
4646.396		V I	39
4646.495		Cr I	147
4646.684		Sm II	26
4646.808		Cr I	186
4646.94	P	Ni I	145
4647	P	C IV	6
4647.34		Ne II	72
4647.40		C III	1
4647.40		Ti IV	
4647.42	P	Ni I	148
4647.437		Fe I	409
4647.50		La II	77
4647.585		Mn II	18
4647.72	P	Fe I	722
4647.759		Nd II	46
4648.126		Cr I	32
4648.160		Sm II	1
4648.17		S II	36
4648.23	P	Fe II	38
4648.62		Al II	82
4648.659		Ni I	98
4648.868		Cr I	32
4648.933		Fe II	25
4649.06		A II	51
4649.139		O II	1
4649.461		Cr I	32
4649.54	P	Cr I	233
4649.828		Fe I	592
4650.016		Ti I	145
4650.04	P	Fe II	146
4650.16		C III	1
4650.544		Al II	59
4650.646		Al II	59
4650.841		O II	1
4651.285		Cr I	21
4651.35		C III	1
4651.42	P	V II	45
4651.517		Pr II	6
4652.158		Cr I	21
4652.280		Fe II	219
4652.816		Mn II	18
4653.0		Al II	81
4653.49	P	Fe I	17
4654.14		Si IV	7
4654.23		O I	18
4654.286		Ce II	154
4654.501		Fe I	38
4654.56		O I	18
4654.57		N II	11
4654.628		Fe I	554,821
4654.736		Cr I	186
4654.986		Gd II	65
4655.05		Al II	106
4655.36		O I	18
4655.49		La II	75
4655.661		Ni I	115
4655.712		Ti I	261
4655.75	P	Ti II	38
4656.048		Ti I	145
4656.189		Cr I	147
4656.468		Ti I	6
4656.74		S II	9
4656.80		Si II	
4656.837		Cr I	311
4656.974		Fe II	43
4657.210		Ti II	59
4657.38		Ni I	254
4657.390		Co I	156
4657.598		Fe I	346
4657.64		Zr I	64
4657.94		A II	15
4658.03	P	Fe II	170
4658.03		Lu I	2
4658.12		P II	15
4658.29		Fe I	591
4658.64		C IV	8
4659.38		K II	5
4660	P	C IV	9
4660.93	P	Fe II	146
4661.19	P	Fe II	170
4661.22		Cl I	15
4661.33	P	Fe I	347
4661.538		Fe I	1207
4661.635		O II	1
4661.78		Zr II	129
4661.88		Eu I	1
4661.933		Mo I	6
4661.975		Fe I	409
4662.0	P Forb	Na I	13
4662.51		La II	8
4662.71	P	Ti II	38
4662.74	P	Ti II	38
4662.767		Mo I	6
4663.054		Al II	2
4663.183		Fe I	754
4663.328		Cr I	186
4663.403		Co I	156
4663.53		C III	5
4663.700		Fe II	44
4663.76		La II	82
4663.78		Fe III	52
4663.832		Cr I	186
4664.14		Hf II	14
4664.272		Gd II	127
4664.32	P	Ni I	147
4664.647		Pr II	27
4664.71	P	Fe I	347
4664.79	P	Fe II	17
4664.798		Cr I	186
4664.811		Na I	12
4665	P	C IV	7
4665.24	P	Fe I	1115
4665.56	P	Fe I	1044
4665.8	P Forb	Na I	13
4665.80	P	Fe II	26
4665.87		Si III	13

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4665.90		C III	5	4681.908		Ti I	6	4700.42	P	Fe I	67
4665.902		Cr I	233	4681.990		Cu II	4	4700.608		Cr I	62
4666.149		V I	94	4682.12		La II	37	4700.80		P II	14
4666.215		Cr I	99	4682.28		Ra II	1	4701.052		Fe I	820
4666.28		A II	51	4682.29		A II		4701.159		Mn I	21
4666.448		Gd II	101	4682.32		Y II	12	4701.23		O II	58
4666.512		Cr I	186	4682.361		Co I	156	4701.336		Ni I	101
4666.750		Fe II	37	4682.58		Fe I	384	4701.536		Ni I	235
4666.8		Al II	105	4682.68		Hf II	102	4701.65		Al III	6
4666.994		Ni I	146	4683.018		Si III	13	4701.76		O II	58
4667.181		Cr I	99	4683.43		Zr I	63	4701.90	P	Fe I	688
4667.28		N II	11	4683.565		Fe I	346	4701.92		Cr I	170
4667.459		Fe I	822	4683.774		Si III	13	4702.3164		A I	9
4667.53	P	Ti I	77	4684.457		V I	94	4702.57		N II	68
4667.585		Ti I	6	4684.484		Ti I	203	4702.9758		Mg I	11
4667.766		Ni I	163	4684.605		Ce II	228	4702.9831		Mg I	11
4668.07	P	Fe I	826	4684.605		Cr I	146	4702.9909		Mg I	11
4668.142		Fe I	554	4684.77		Cr II	178	4703.03		Zr II	138
4668.357		Ti I	77	4685.03	P	Fe I	347	4703.18		O II	40
4668.560		Na I	12	4685.19		Zr II	129	4703.27		La II	76
4668.58		S II	36	4685.265		Ca I	51	4703.36		A II	
4668.91		La II	76	4685.682		He II	1	4703.576		Nd II	55
4669.174		Fe I	821	4685.837		Ge I	3	4703.62		Hf II	72
4669.273		V I	4	4685.95	P	Fe II	50	4703.808		Ni I	133
4669.33		O II	90	4686.218		Ni I	98	4704.33		N II	68
4669.336		Cr I	186	4686.921		Ti I	203	4704.386		Co I	178
4669.396		Sm II	7	4686.926		V I	93	4704.395		Ne I	11
4669.502		Ce II		4687.183		Sm II	3	4704.397		Sm II	1
4669.53		O II	89	4687.30	P	Fe I	17	4704.958		Fe I	821
4669.650		Sm II	26	4687.387		Fe I	347	4705.099		V I	136
4669.67		Cr I	170	4687.67	P	Fe I	347	4705.355		O II	25
4669.977		Ru I	11	4687.80		Zr I	43	4705.464		Fe I	752
4670.170		Fe II	25	4687.82	P	Ti I	111	4705.50		Ni I	101
4670.404		Sc II	24	4688.38	P	Fe I	1071	4705.93		Ni I	128
4670.483		V I	39	4688.392		Ti I	306	4706.102		Cr I	170
4671.25		Fe III	58	4688.45	P	V II	45	4706.178		V I	94
4671.36	P	Cr II	178	4688.45		Zr I	5	4706.31	P	Fe I	890
4671.686		Cu II	4	4688.65		La II	92	4706.41		N II	68
4671.688		Mn I	21	4689.374		Cr I	186	4706.542		Nd II	3
4671.82		La II	80	4689.46	P	Ti II	38	4706.574		V I	119
4671.94	P	Sc II	48	4690.146		Fe I	820	4706.967		Sc I	22
4672.02	P	Fe I	1045	4690.38	P	Fe I	17	4707.281		Fe I	554
4672.081		Pr II	21	4690.827		Ti I	76	4707.487		Fe I	346
4672.75		O I	17	4690.97		O II	58	4707.541		Pr II	5
4672.83	P	Fe I	40	4691.17		La II	23	4707.754		Cr I	195
4673.169		Fe I	820	4691.336		Ti I	75	4707.78		Zr I	63
4673.28	P	Fe I	822	4691.414		Fe I	409	4707.80		O II	89
4673.462		Be II	6	4691.47		O II	58	4708.040		Cr I	186
4673.555		Cu II	4	4691.55	P	Fe II	17	4708.663		Ti II	49
4673.70		O I	17	4692.45	P	Ti I	77	4708.854		Ne I	11
4673.75		O II	1	4692.50		La II	75	4708.94		Ba II	15
4673.91		C III	5	4692.97		Cr I	99	4708.972		Fe I	889
4674.41		Zr II	139	4693.190		Co I	156	4708.976		Ti I	203
4674.599		Sm II	14	4693.628		Sm II	14	4709.092		Fe I	821
4674.65	P	Fe I	40	4693.670		Ti I	6	4709.336		Sc I	22
4674.84		Y I	4	4693.949		Cr I	99	4709.45		N II	25,68
4674.98		N II	11	4694.13		S I	2	4709.484		Ru I	14
4675.118		Ti I	77	4694.55		N II	61	4709.714		Nd II	7
4675.45		Hf II	92	4695.153		Cr I	99	4709.715		Mn I	21
4675.639		Ni I	115	4695.45		S I	2	4710.04		Ne II	73
4676.234		O II	1	4695.91		N II	68	4710.04		O II	24
4676.911		Sm II	3	4696.12	P	Ce II	153	4710.058		Ne I	11
4677.00		O II	91	4696.25		S I	2	4710.08		Zr I	43
4677.528		Co I	15	4696.36		O II	1	4710.186		Ti I	75,203
4677.59	P	Fe I	1072	4696.71	P	Sc II	48	4710.24		Cr I	145
4677.67		S III	10	4696.923		Ti I	203	4710.286		Fe I	409
4677.858		Tm II	5	4697.062		Cr I	62	4710.566		V I	119
4677.93		N II	62	4697.395		Cr I	195	4711.68	P	Ti I	111
4678.160		Cd I	2	4697.62		Cr II	177	4711.732		Sc I	22
4678.41	P	Fe I	688	4698.276		Sc II	13	4711.91		Zr I	64
4678.852		Fe I	821	4698.389		Co I	156	4711.975		Gd II	64
4678.94	P	Ce II	153	4698.408		Ni I	235	4712.060		Ne I	16
4678.95		P II	28	4698.456		Cr I	186	4712.069		Ni I	131
4679.229		Fe I	688	4698.48		O II	40	4712.104		Fe I	467
4679.73	P	Ti I	77	4698.615		Cr I	62,146	4712.13		N II	68
4679.87	P	Cr II	25	4698.62		N II	68	4712.92		La II	38
4679.96	P	Fe I	1071	4698.64	P	Cr II	25	4713.057		Sm II	49
4680.127		Ce II	18	4698.67	P	Ti II	59	4713.143		He I	12
4680.138		Zn I	2	4698.766		Ti I	75	4713.18	P	Fe II	26
4680.297		Fe I	39	4698.86	P	Ti I	203	4713.26		Y II	22
4680.458		Ce II	2	4698.947		Cr I	146	4713.373		He I	12
4680.475		Fe I	346	4699.180		Co I	27	4713.84	P	Ni I	128
4680.49		Cr I	186	4699.21		O II	25,40	4713.996		Ce II	250
4680.539		W I	1	4699.589		Cr I	292	4714.074		Fe I	1206
4680.734		Nd II	4	4699.62		La II	39	4714.113		V I	119
4680.870		Cr I	170	4699.72		Hf II	71	4714.182		Fe I	591
4681.05	P	Ni I	143	4700.1		Ne II	67	4714.421		Ni I	98
4681.32		S II	8	4700.12		N II	68	4714.53		Fe III	57
4681.52		A II	76	4700.171		Fe I	935	4714.83		Ce II	17
4681.786		Ru I	6	4700.21		S II	52	4715.12		Cr II	178

I A	Type	Element	Multiplet No.
4715.295		Ti I	6
4715.344		Ne I	16
4715.589		Nd II	49
4715.778		Ni I	98
4715.900		V I	136
4716.13	P	Sc II	13
4716.226		S II	9
4716.44		La II	52
4716.576		Gd II	102
4716.644		V I	51
4716.658		Si III	
4716.85	P	Fe I	634
4717.031		Sc I	14
4717.58		La II	87
4717.688		Cr I	170
4717.692		V I	119
4717.718		Sm II	41
4718.16		Ca II	7
4718.329		Sm II	53
4718.429		Cr I	186
4718.43		N II	68
4719.040		Gd II	43
4719.10		Hf II	15
4719.12		Zr I	66
4719.37		Ne II	67
4719.515		Ti II	59
4719.80		Zr II	116
4719.838		Sm II	3
4719.93		La II	81
4720.15	P	Fe II	54
4720.26		P II	8
4720.56	P	Fe I	1114
4720.830		Sc I	14
4720.997		Fe I	1071,409
4721.14		Cr I	232
4721.273		Gd II	83
4721.43		Cl II	75
4721.524		V I	108
4721.59		N II	68
4721.62		A II	85
4722.159		Zn I	2
4722.278		Sr I	5
4722.333		Bi I	2
4722.58		Ca II	7
4722.603		Ti I	75
4722.652		Bi I	2
4722.741		Cr I	195
4722.877		V I	108
4723	P	N IV	11
4723.06		Cr I	145
4723.171		Ti I	75
4723.18		Cr I	292
4723.37	P	Ni I	162
4723.88	P	Ni I	167
4724.07	P	Fe II	17
4724.416		Cr I	145
4724.42		La II	50
4724.679		Ti I	203
4725.090		Ce II	153
4725.67		Cr I	195
4725.94		Fe I	1134
4725.95		Cr I	99
4726.165		Fe I	384
4726.725		Gd II	148
4726.91		A II	14
4727.01	P	Fe I	635
4727.153		Cr I	99
4727.21		C II	48
4727.405		Fe I	821
4727.476		Mn I	21
4727.851		Ni I	146
4727.9	P	Mn II	5
4727.936		Co I	15
4728.41		La II	22
4728.42		Ni I	115
4728.468		Gd II	65
4728.555		Fe I	822
4728.769		Sc I	14
4729.028		Fe I	1043a
4729.226		Sc I	14
4729.291		Ni I	235
4729.45		S II	46
4729.544		V I	93
4729.699		Fe I	688
4729.723		Cr I	169
4730.0285		Mg I	10
4730.24		Ne II	72
4730.361		Mn II	5
4730.394		V I	108
4730.69		A II	94
4730.711		Cr I	145
4730.92		As II	3
4731.172		Ti I	202
4731.36		Hf II	38
4731.439		Fe II	43
4731.77	P	Fe I	67
4731.809		Ni I	163
4732.051		Co I	15
4732.08		A II	38
4732.34		Zr I	48
4732.465		Ni I	235
4732.53		Ne II	67
4732.60		Gd II	65
4732.96	P	Ti II	29
4733	P	N IV	11
4733.426		Ti I	202
4733.596		Fe I	38
4734.094		Sc I	14
4734.100		Fe I	1133
4734.177		Pr II	4
4734.427		Gd II	43
4734.52		Y II	
4734.682		Ti I	233
4734.75		C II	48
4734.828		Co I	156
4734.94		Zr II	138
4735.67		Hf II	25
4735.75		Hf II	59
4735.846		Fe I	1042
4735.93		A II	6
4736.13		Cr I	195
4736.50		Ni I	99
4736.780		Fe I	554
4737	P	C IV	12
4737.282		Ce II	
4737.350		Cr I	145
4737.59		V II	16
4737.633		Fe I	590
4737.642		Sc I	14
4737.769		Co I	57
4738.11		C II	1
4738.29		Mn II	5
4738.41		Cl II	75
4738.52	P	Fe II	170
4739.108		Mn I	21
4739.42		Cl II	13
4739.48		Zr I	43
4739.49		Ce II	157
4739.49		P II	14
4739.59		Mg II	18
4739.80		La II	64
4740	P	N IV	11
4740.165		Ni I	99
4740.27		La II	8
4740.343		Fe I	409
4740.40		Cl II	51
4741.018		Sc I	14
4741.081		Fe I	688
4741.089		Cr I	292
4741.34	P	Ni I	166
4741.533		Fe I	346
4741.71		O II	25
4741.922		Sr I	5
4742.00		Ge II	2
4742.129		Ti I	202
4742.32	P	Ti I	111
4742.4		S II	8
4742.631		V I	128
4742.791		Ti I	233
4742.93	P	Fe I	1072
4743.08		La II	75
4743.112		Cr I	290
4743.28	P	Fe II	31
4743.814		Sc I	14
4744.13	P	Fe I	1168
4744.64	P	Fe I	17
4744.90		C II	1
4744.925		Pr II	3
4745.129		Fe I	67
4745.308		Cr I	61
4745.680		Sm II	7
4745.806		Fe I	821,1068
4746.115		Co I	182
4746.638		V I	113
4747.00		Cr I	168
4747.143		Ce II	
4747.256		Ti I	75
4747.680		Ti I	233
4747.941		Na I	11
4748.12	P	Sc II	48
4748.525		V I	113
4748.67		Cl II	75
4748.73		La II	65
4749.25		Cr I	195
4749.25	P	Fe I	1098
4749.68		Co I	156
4749.93		Fe I	1206
4750.49	P	Fe II	206
4750.990		V I	113
4751	P	N V	5
4751	P	O VI	10
4751.04		Cr I	290
4751.34		O II	24
4751.574		V I	94
4751.822		Na I	11
4752	P	N IV	11
4752.084		Cr I	
4752.124		Ni I	165
4752.426		Ni I	132
4752.70		O II	24
4752.7313		Ne I	21
4752.87		Cr I	194
4753.06		Zr I	66
4753.152		Sc I	5
4753.957		V I	113
4754.042		Mn I	16
4754.358		Co I	156
4754.38		Ti I	202
4754.635		Pr II	4
4754.743		Cr I	168
4754.768		Ni I	141
4755.12		S II	35
4755.137		Cr I	124
4755.347		Gd II	134
4755.64		Cl II	13
4755.728		Mn II	5
4756.113		Cr I	145
4756.519		Ni I	98
4756.722		Co I	180
4757.326		Cr I	290
4757.37		V I	113
4757.50		V I	113
4757.565		W I	7
4757.582		Fe I	634,1115
4757.591		Cr I	231
4757.791		Gd II	45
4757.841		Ru I	12
4757.842		Ce II	
4758.120		Ti I	233
4758.42		Ni I	193
4758.421		Cu II	1
4758.742		V I	51
4758.913		Ti I	41
4759.272		Ti I	233
4759.74		Cr I	124
4759.74		Ti I	202
4759.907		Cr I	169
4760.07	P	Fe I	384
4760.15	P	Fe II	169
4760.23	P	Ni I	114
4760.59		Hf II	85
4760.98		Y I	4
4761.242		Cr I	169
4761.42		Cr II	176
4761.526		Mn I	21
4761.67		Zr II	107
4761.73		Cr I	194
4762	P	N IV	11
4762.376		Mn I	21
4762.41		C I	6
4762.627		Ni I	71
4762.727		Pr II	26
4762.77		Ti II	17
4762.78		Zr I	66
4763.38		S II	35
4763.624		Nd II	54
4763.79	P	Fe II	50
4763.84	P	Ti II	48
4763.865		Nd II	6
4763.950		Ni I	146
4764.294		Cr I	231
4764.535		Ti II	48
4764.643		Cr I	124
4764.7	P	Mn II	5
4764.89		A II	15
4765.30		Cl II	13
4765.485		Fe I	40
4765.78		Hf II	84
4765.859		Mn I	21
4766.330		Ti I	233

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4766.430		Mn I	21	4786.908		Gd II	65	4804.12		S II	8
4766.62		C I	6	4787.50	P	Fe I	408	4804.529		Fe I	794
4766.63		Cr I	231	4787.64	P	Ti I	40	4804.59	P	Fe I	721
4766.635		V I	113	4787.74		Cr I	168	4804.64		Cr I	61
4766.66	P	Cr I	124	4787.84		Fe I	384	4805.105		Ti II	92
4766.87	P	Fe I	688	4788.126		N II	20	4805.18	P	Cr II	25
4767.142		Co I	182	4788.69		Zr I	43	4805.24		Cr I	283
4767.280		Cr I	231	4788.757		Fe I	588	4805.416		Ti I	260
4767.30	P	Ti II	29	4788.9258		Ne I	15	4805.817		Gd II	60
4767.860		Cr I	231	4789	P	C IV	5	4805.88		Zr I	43
4768.072		Co I	156	4789.354		Cr I	31	4806.07		A II	6
4768.334		Fe I	821	4789.654		Fe I	753	4806.165		Gd II	116
4768.397		Fe I	384	4789.68	P	Ce II	228	4806.255		Cr I	61
4768.68		Cl II	40	4789.803		Ti I	41	4806.33	P	Ti II	17
4769.775		Ti I	233	4790.218		Ne I	32	4806.75	P	Ti I	40
4769.80		Cr I	283	4790.337		Cr I	31	4806.996		Ni I	163
4770.00		C I	6	4790.56	P	Fe I	1068	4807.14		Hf II	57
4770.670		Cr I	124	4790.72		Hf II	60	4807.243		Fe I	634,1098
4771.09		Cl II	40	4790.75	P	Fe I	632	4807.537		V I	113
4771.103		Ti I	41	4791.00		Ni I	71	4807.725		Fe I	688
4771.108		Co I	156	4791.150		Gd II	65	4808.155		Fe I	633
4771.57		Cr I	124	4791.250		Fe I	633	4808.52		Ni I	114
4771.66		Cl II	45	4791.500		Sc I	5	4808.531		Ti I	305
4771.702		Fe I	67	4791.584		Sm II	7	4808.864		Ni I	160
4771.72		C I	6	4792.02		S II	46	4809.00		La II	37
4772.32		Zr I	43	4792.04		Cl II	18	4809.14		Fe I	933
4772.54		O I	16	4792.06		P II	36	4809.18		Hf II	59
4772.57		O IV	9	4792.12		A II	62	4809.26	P	Fe I	1039
4772.728		Gd II	133	4792.24	P	Ti I	40	4809.32		Cr I	230
4772.77	P	Fe II	31	4792.39	P	Ti II	48	4809.94		Fe I	793
4772.817		Fe I	38,467	4792.482		Ti I	260	4810.06		Cl II	1
4772.89		Ni I	162	4792.513		Cr I	168	4810.17		V II	35
4772.89		O I	16	4792.63		Au I	3	4810.286		N II	20
4773.412		Ni I	167	4792.855		Co I	158	4810.534		Zn I	2
4773.52	P	Fe I	408	4793.47		Ni I	158	4810.733		Cr I	144
4773.76		O I	16	4793.656		N II	20	4810.760		Fe II	169
4773.942		Ce II	17	4793.96	P	Fe I	512	4811.04		Fe I	467
4774.222		N II	20	4794.22		O IV	9	4811.074		Ti I	158
4774.557		Cr I	124	4794.36	P	Fe I	115	4811.14		V II	197
4775.141		Cr I	230	4794.54		Cl II	1	4811.343		Nd II	3
4775.53		Cr I	283	4794.84	P	Ti II	29	4811.57		Cl II	74
4775.87		C I	6	4795.62		Ne II	71	4811.61		Au I	3
4775.87	P	Fe I	1115	4795.84		Ni I	128	4811.881		Sr I	5
4776.075		Fe I	635	4795.853		Co I	185	4811.999		Ni I	130
4776.311		Co I	158	4796.169		Cr I	283	4812.240		Ti I	260
4776.34		Fe I	1206	4796.210		Ti I	260	4812.35		Cr II	30
4776.364		V I	113	4796.378		Co I	14	4812.84		C I	5
4776.519		V I	128	4796.67		La II	63	4812.906		Ti I	41
4777.57		Cr I	124	4796.84		Cr I	283	4812.940		Cu II	8
4777.78	P	Cr II	25	4796.930		V I	113	4813.00		V II	248
4777.846		Sm II	3	4797.157		Nd II	60	4813.07		O IV	9
4778.233		Co I	186	4797.69		Cr I	230	4813.11		Fe I	630
4778.259		Ti I	232	4797.973		V I	93	4813.290		Si III	9
4778.50		Cr I	124	4797.983		Ti I	260	4813.45	P	Co I	142
4778.93		Cl II	40	4798.25		O IV	9	4813.476		Co I	158
4779.09		O IV	9	4798.269		Fe I	1042	4813.72	P	Fe I	1243
4779.11		S II	8	4798.40		Cl II	13	4813.952		V II	197
4779.347		Sc I	5	4798.535		Ti II	17	4813.966		Co I	158
4779.444		Fe I	720	4798.736		Fe I	38	4814.265		Cr I	144
4779.710		N II	20	4799.06	P	Fe I	1098	4814.617		Ni I	98
4779.87		Cr I	124	4799.30		Y I	13	4814.80		Ge II	·2
4779.979		Co I	158	4799.412		Fe I	888	4815.05		Zr I	44
4779.986		Ti II	92	4799.423		Nd II	2	4815.22	P	Fe I	720
4780.60	P	Fe II	50	4799.786		V I	3	4815.515		S II	9
4780.81	P	Fe I	633	4799.797		Ti I	242	4815.62		Zr I	43
4781.04		Y I	13	4799.83		Ni I	161	4815.808		Sm II	14
4781.168		N II	20	4799.859		Gd II	126	4815.900		Co I	142
4781.32		Cl II	40	4799.918		Cd I	2	4815.92		Ni I	131
4781.432		Co I	57	4799.94	P	V II	29	4816.012		Sm II	41
4781.718		Ti I	41	4800.100		Gd II	133	4816.41		Cr I	283
4781.82		Cl II	13	4800.14		Fe I	384	4816.47	P	Ti I	40
4781.95		Ne II	71	4800.55	P	Fe I	590	4816.47		Zr II	66
4782.79	P	Fe I	588	4800.652		Fe I	1042	4816.67	P	Fe I	588
4783.06		Cr I	283	4800.77	P	O IV	9	4817.22		Hf II	69
4783.306		Ti I	41	4801.030		Cr I	168	4817.33		C I	5
4783.420		Mn I	16	4801.05		Gd II	65	4817.773		Fe I	67
4783.43		O IV	9	4801.150		Pr II	36	4817.847		Ni I	254
4784.320		Sr I	5	4801.63	P	Fe I	1115	4818.26	P	Fe II	11
4784.480		V I	3	4801.80		O I	15	4818.66	P	Fe I	719
4784.70	P	Cr I	168	4801.90	P	Ti I	40	4819.46		Cl II	1
4784.94		Zr I	44	4501.93	P	Ti I	40	4819.60		S II	46,52
4785.070		Co I	186	4802.20		O I	15	4819.64		Y I	13
4785.42		Lu II	5	4802.53	P	Fe I	1206	4819.740		Si III	9
4785.44		Cl II	40	4802.575		Gd II	43	4819.79		Cl II	13
4785.963		Fe I	1044	4802.81		S III		4820.336		Nd II	47
4786.293		Ni I	50	4802.883		Fe I	888,934	4820.410		Ti I	126
4786.515		V I	113	4803.00		O I	15	4821.01	P	Ti II	29
4786.541		Ni I	98	4803.272		N II	20	4821.143		Ni I	254
4786.58		Y II	22	4803.536		Gd II	102	4821.29		Ti I	201
4786.810		Fe I	467	4804.04		La II	37	4821.955		Gd II	133

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4822.06		Cr I	144	4840.329		Fe I	1068	4858.24	P	Fe I	1069
4822.39	P	Ti II	110	4840.874		Ti I	53	4858.27	P	Fe I	1098
4822.66	P	Fe I	633	4840.89	P	Fe I	1070	4858.74		N III	9
4823.31		Y II	22	4841.52	P	Cr I	266	4858.88		N III	9
4823.396		V II	223	4841.65	P	Fe I	633	4859.030		Nd II	3
4823.516		Mn I	16	4841.67	P	Ni I	164	4859.038		Pr II	25
4823.84		P II	13	4841.701		Sm I	2	4859.12		Fe I	1068
4823.93	P	O IV	9	4841.73		Cr I	266	4859.18		La II	86
4824.05		La II	50	4841.80		Fe I	1070	4859.28		Si II	
4824.07		S II	52	4841.98		Zr II	138	4859.31	P	Fe I	632
4824.13		Cr II	30	4842.01		Ni I	260	4859.323		He II	2
4824.162		Fe I	888	4842.19	P	Fe I	511	4859.748		Fe I	318
4824.20		Ge II	2	4842.50		V II	248	4859.84		Y I	13
4824.29		Zr I	43	4842.71	P	Fe I	1098	4860.029		D	1
4824.97	P	Cr II	25	4842.78		Fe I	1069	4860.20		Cr II	30
4825.445		Ti I	250	4843.155		Fe I	687	4860.35		N II	67
4825.482		Nd II	3	4843.165		Ni I	50	4860.37		Cr I	31
4825.51		Cr I	144	4843.19		Mn I	43	4860.90		La II	8
4825.593		Mn I	43	4843.26		O II	105	4860.98	P	Fe I	688
4825.71	P	Fe II	30	4843.29		La II	98	4861.03		O II	57
4825.91		Ra I	1	4843.39	P	Fe I	794	4861.205		Cr I	31
4826.649		Pr II	20	4843.454		Co I	158	4861.33		N III	9
4826.73		C I	5	4843.46		Ba II	15	4861.332		H	1
4826.87		La II	22	4843.53	P	Ni I	235	4861.842		Cr I	31
4826.896		Mn I	43	4843.829		W I	1	4862.054		Mn I	43
4827.338		Ne I	10	4843.989		Ti I	217	4862.54	P	Fe I	1070
4827.458		V I	3	4844.00		Hf II	16	4862.60	P	Fe I	1069
4827.597		Ti I	250	4844.016		Fe I	750	4863.653		Fe I	687
4828.05		Zr I	44	4844.208		Sm II	26	4863.75	P	Ti I	217
4828.66		Cr I	31	4844.31	P	V II	29	4863.78	P	Fe I	384
4828.923		Si III	9	4844.315		Mn I	43	4863.931		Ni I	113
4829.028		Ni I	131	4844.87	P	Ce II	8	4864.187		Ti I	201
4829.23		K II	1	4845.01		O II	30	4864.282		Ni I	128
4829.376		Cr I	31	4845.17		Ni I	115	4864.32		Cr II	30
4829.568		Sm II	36	4845.656		Fe I	588,888	4864.38		P II	13
4829.68	P	Fe I	1038	4845.67		Y I	13	4864.741		V I	3
4830.40	P	Fe II	206	4846.29		Cr I	208	4864.83	P	V I	50
4830.51		La II	51	4846.47	P	Fe II	25	4864.95		O II	29
4831.11	P	Fe II	54	4846.574		Ce II	17	4865.02		Gd II	65
4831.15	P	Ni I	100	4847.09	P	Fe I	67	4865.43		Hf II	93
4831.183		Ni I	111	4847.14		Ba II	14	4865.620		Ti II	29
4831.627		Cr I	208	4847.177		Cr I	144	4865.96		A II	85
4831.642		V I	3	4847.296		Ca I	50	4866.07		Zr I	44
4832.065		Ti I	250	4847.61	P	Fe II	30	4866.267		Ni I	111
4832.075		Sr I	4,5	4847.760		Sm II	53	4866.77	P	Fe I	1093
4832.236		Cu II	1	4847.90		A II	6	4867.18		N III	9
4832.276		Nd II		4848.24		Cr II	30	4867.53	P	Fe I	38
4832.427		V I	3	4848.41	P	Ti I	217	4867.59		A II	62
4832.54	P	Cr I	266	4848.46		Hf II	83	4867.64	P	Fe I	587
4832.704		Ni I	146	4848.487		Ti I	201	4867.73	P	Fe II	30
4832.734		Fe I	888,1098	4848.821		V I	78	4867.79	P	V II	29
4832.97	P	Cr II	176	4848.898		Fe I	114	4867.839		Nd II	46
4833.027		V I	78	4849.12	P	Ni I	112	4867.870		Co I	158
4833.21	P	Fe II	30	4849.18	P	Ti II	29	4868.264		Ti I	231
4834.232		Gd II	65	4849.4		Ne II	71	4868.38	P	Fe I	38
4834.359		Co I	57	4849.67	P	Fe I	793	4868.700		Sr I	10
4834.511		Fe I	115	4850.58		La II	51,88	4868.82	P	Fe II	30
4834.618		Sm II	45	4850.84		Ba II	15	4869.153		Ru I	11
4834.82	P	Ni I	158	4851.10		Mg II	25	4869.45	P	Fe I	751
4835.68		Cr I	229	4851.36		Zr I	43	4869.8		Ne II	71
4835.85		S II	46	4851.465		Cr I	208	4870.05	P	Fe I	985
4835.862		Fe I	1068	4851.483		V I	3	4870.129		Ti I	231
4835.982		Nd II	1	4852.560		Ni I	130	4870.71	P	Fe II	30
4836.125		Ti I	241	4852.69		Y I	13	4870.796		Cr I	143
4836.18	P	Cr I	266	4853.30	P	Ni I	207	4870.845		Ni I	131
4836.22		Cr II	30	4853.52	P	Cr I	61	4871.27	P	Fe II	25
4836.27		Ni I	114	4853.74		Ni I	99	4871.323		Fe I	318
4836.79		Cl II	13	4854.18	P	Fe I	1243	4871.58		O II	57
4836.857		Cr I	144	4854.365		Sm II	36	4871.94	P	Fe I	630
4837.42	P	Ti I	250	4854.604		Mn I	43	4872.02		Cr I	30
4837.65	P	Fe I	1243	4854.65		Zr II	78	4872.144		Fe I	318
4837.65	P	Ni I	85	4854.727		Ti I	217	4872.493		Sr I	4
4837.948		Co I	15	4854.87		Y II	22	4872.69	P	Fe I	1115
4838.09	P	Fe I	630	4854.89		Fe I	1043	4872.91	P	Fe I	1097
4838.244		Mn I	43	4855.045		Sr I	10	4873.27	P	Ni I	112
4838.519		Fe I	687	4855.146		Cr I	61	4873.339		Gd II	65
4838.651		Ni I	260	4855.235		Co I	14	4873.437		Ni I	111
4838.81	P	Fe I	1167	4855.414		Ni I	130	4873.58		N III	9
4839.08		V II	223	4855.54	P	Fe II	25	4873.74	P	Fe I	633
4839.251		Ti I	217	4855.683		Fe I	687	4874.025		Ti II	114
4839.251		Ti II	110	4855.95	P	Ti II	114	4874.35	P	Fe I	467
4839.549		Fe I	588	4856.012		Ti I	231	4874.651		Cr I	167
4839.616		Gd II	126	4856.19		Cr II	30	4874.805		V II	197
4839.62		Lu II	2	4856.49		O II	29	4874.809		Ni I	98
4839.77	P	Fe I	1206	4856.76		O II	29	4875.32	P	Fe I	1038
4839.87		Y I	13	4857.04		Cl II	74	4875.462		V I	3
4840.00	P	Fe II	30	4857.34		Cr I	61	4875.49.	P	V II	248
4840.02		La II	37	4857.382		Ni I	111	4875.72	P	Fe I	1243
4840.22		Cr I	266	4857.60		Cr II	200	4875.89		Fe I	687
4840.253		Co I	158	4857.938		Co I	15	4875.966		Gd II	126

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4876.06		Sr I	4	4896.71		N III	9	4919.867		Ti I	200
4876.19	P	Fe I	631	4896.77		Cl II	17	4920.272		Co I	57
4876.325		Sr I	5	4898.52		Al II	96	4920.28	P	Cr II	36
4876.41		Cr II	30	4898.76		Al II	104	4920.35	P Forb	He I	49
4876.48	P	Cr II	30	4899.520		Co I	92	4920.509		Fe I	318
4877.08		A II	112	4899.64		Al II	96	4920.692		Nd II	2
4877.61	P	Fe I	384	4899.90	P	Fe II	30	4920.945		Cr I	143
4878.049		Gd II	64	4899.910		Ti I	157	4920.98		La II	7
4878.132		Ca I	35	4899.92		La II	7	4921.074		Ru I	11
4878.218		Fe I	318	4899.934		Ba II	3	4921.18	P	Ni I	100
4879.121		Pr II	20	4900.03	P	Ti I	295	4921.29		Ta I	5
4879.90		A II	14	4900.13		Y II	22	4921.69		Si II	
4880.06		Cr I	167	4900.47		S II	46	4921.768		Ti I	200
4880.20		La II	153	4900.50	P	Cr I	202	4921.80		La II	7
4880.25		Co I	15	4900.624		V I	118	4921.929		He I	48
4880.30	P	V II	29	4900.625		Ti I	295	4922.14		Cl II	17
4880.560		V I	50	4900.83	P	Cr I	202	4922.18	P	Fe I	1110
4880.922		Ti I	201	4900.97		Ni I	98	4922.267		Cr I	143
4881.25		Zr I	44	4901.30		S II	46	4922.3		Ne II	71
4881.3		Li II	4	4901.65		Cr II	190	4923.578		Gd II	126
4881.44		Y II	12	4902.77		Al II	96	4923.921		Fe II	42
4881.554		V I	3	4902.89	P	V II	29	4924.043		Zn II	3
4881.726		Fe I	588,1041	4903.10	P	Fe I	589	4924.08		S II	7
4881.81		N III	9	4903.239		Cr I	31	4924.28		Cl II	12
4881.925		Gd II	113,133	4903.317		Fe I	318	4924.60		O II	28
4882.151		Fe I	687	4903.71		Al III	11	4924.776		Fe I	114
4882.183		V I	50	4903.85	P	Fe II	30	4924.83		Cl II	39
4882.25		A II		4904.172		Co I	141	4925	P	O V	10
4882.326		Ti I	231	4904.285		V I	50	4925.17		Cl II	12
4882.462		Ce II		4904.350		V I	118	4925.28		Fe I	1065
4882.704		Co I	158	4904.413		Ni I	129	4925.32		S II	7
4883.415		V II	209	4904.447		V I	118	4925.396		Ti I	157
4883.61		Zr I	44	4904.51		Hf II	83	4925.578		Ni I	141
4883.69		Y II	22	4904.75		A II	34	4925.657		V I	50
4883.73		S II	46	4904.76		Cl II	17	4925.90		Zr II	107
4884.06		V II	197	4905.09		Zr I	43	4926.02		Ta I	6
4884.14		N III	9	4905.15		Fe I	986	4926.148		Ti I	39
4884.57		Cr II	30	4906.11		Y I	13	4926.82	P	Fe I	844
4884.915		Ne I	20,35	4906.80	P	Fe I	1096	4926.94	P	V II	29
4884.949		Cr I		4906.88		O II	28	4926.99		Hf II	13
4885.082		Ti I	157	4906.88		Si II		4927.17		P II	13
4885.435		Fe I	966	4907.125		Co I	14	4927.42		Fe I	792
4885.63		S II	15	4907.17		Cl II	39	4927.56		Fe III	43
4885.776		Cr I	30	4907.743		Fe I	687	4928.290		Co I	158
4885.957		Cr I	143	4907.888		Ru I	11	4928.342		Ti I	200
4886.17	P	Fe I	467	4908.46		Ti I	295	4928.62	P	V II	29
4886.335		Fe I	1066	4908.61	P	Fe I	115	4928.895		Ti I	39
4886.725		Ni I	158	4908.67		Zr II	145	4930.04	P	Fe I	631
4886.821		V I	50	4908.74		Fe III	111	4930.183		Cr I	259
4886.92	P	Fe II	54	4909.105		Ti I	39	4930.331		Fe I	985
4886.992		Ni I	141	4909.387		Fe I	985	4930.821		Ni I	193
4887.013		Cr I	143	4909.726		Cu II	5	4931.653		Cu II	5
4887.189		Fe I	1065	4909.87		Cr I	61	4932.00		C I	13
4887.37	P	Fe I	1037	4910.027		Fe I	687	4932.029		V I	50
4887.72		Zr I	43	4910.328		Fe I	1068	4933	P	N V	7
4887.73		Cr I	31	4910.570		Fe I	1068	4933.19	P	Fe I	1070
4888.29		A II	135	4910.838		Gd II	64	4933.24		A II	6
4888.530		Cr I	31	4911.205		Ti II	114	4933.348		Fe I	1065
4888.542		Gd II	126	4911.34		La II	87	4933.878		Fe I	968
4888.651		Fe I	1066	4911.52	P	Fe I	1098	4934.023		Fe I	1068
4889.009		Fe I	67,749	4911.593		Ru I	11	4934.086		Ba II	1
4889.06		A II	15	4911.664		Zn II	3	4934.46		Hf II	16
4889.113		Fe I	985	4911.786		Fe I	984	4934.83		La II	72
4889.15		Re I	1	4912.030		Ni I	111	4934.89		Cr I	259
4889.690		Cu II	1	4912.38		V II	222	4935.03		N I	9
4889.73		Cr I	61	4912.399		Co I	14	4935.42	P	Fe I	886
4890.45	P	Ni I	114	4912.49		Cr II	190	4935.61		La II	50
4890.762		Fe I	318	4912.52	P	Fe I	1040	4935.830		Ni I	177
4890.93		O II	28	4913.248		Sm II	53	4936.13		A II	34
4891.43		La II	95	4913.366		Fe II	218	4936.155		Gd II	116
4891.496		Fe I	318	4913.616		Ti I	157	4936.334		Cr I	166
4891.55	P	Cr II	36	4913.970		Ni I	132	4936.41		Ta I	11
4891.828		Ti I	201	4914.32		A II	112	4936.99		Cl II	12
4891.97		Cr I	61	4914.32		Cl II	17	4937.196		Cu II	6
4891.980		Sr I	10	4914.385		Nd II	52	4937.337		Ni I	114
4892.11		Gd II	116	4914.90		N I	9	4937.719		Ti I	39
4892.86		Fe I	1070	4915.236		Ti I	157	4938.04		Ti I	173
4893.065		Ti I	231	4916.67	P	Fe I	986	4938.100		Sm II	23
4893.12		Zr I	43	4916.78		Gd II	125	4938.183		Fe I	966
4893.44		Y I	13	4917.15		S II	15	4938.283		Ti I	289
4893.59	P	Fe I	1096	4917.25		Fe I	1066	4938.820		Fe I	318
4893.70	P	Fe I	1113	4917.72		Cl II	17	4939.244		Fe I	1065,1070
4893.780		Fe II	36	4918.00		Fe I	1070	4939.46	P	Fe I	1043
4893.90		Ti I	201	4918.363		Ni I	177	4939.690		Fe I	16
4893.968		Ce II	31	4918.373		Cu II	5	4940	P	O V	10
4894.218		V I	118	4918.712		Ni I	113	4941.015		Ti I	173
4894.30		Gd II	65	4918.98		Al II	103	4941.03	P	Cr II	36
4894.43		Zr II	107	4918.999		Fe I	318	4941.12		O II	33
4895.20		N II	1	4919.73	P	Fe I	631	4941.322		Ti I	39
4896.437		Fe I	984	4919.814		Th II	7	4941.562		Ti I	200

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
4941.920		Ni I	114	4967.944		Sr I	4	4997.099		Ti I	5
4942.418		Mn I	20	4968.50		V II	68	4997.23		N II	64
4942.47		S II	7	4968.566		Ti I	173	4997.81		Ba II	14
4942.495		Cr I	9	4968.575		Gd II	124	4998.233		Ni I	111
4942.59	P	Fe I	1097	4968.709		Fe I	887	4998.373		Gd II	133
4942.96		A II	75	4968.76		O I	14	4998.43	P	Al II	30
4943	P	N V	9	4969.65		P II	13	4998.55		Cr I	123
4943.06		O II	33	4969.927		Fe I	1066	4999.114		Fe I	1040
4943.074		Ti I	52	4970.12		Cl II	12	4999.46		La II	37
4943.24		Cl II	47	4970.39		La II	37	4999.504		Ti I	38
4943.24		K II	7	4970.496		Fe I	883	4999.69		Hf II	35
4943.42		P II	13	4970.66	P	Fe I	985	5000.335		Ni I	145
4944.388		Ti I	173	4971.354		Ni I	274	5000.73	P	Fe II	25
4944.59		Cr I	259	4971.475		Ce II		5000.91		Zr II	95
4945	P	N V	10	4971.668		Sr I	4	5000.97		Al II	79
4945.29	P	Fe I	466	4971.92		Li I	5	5000.991		Ti I	173
4945.38		Hf II	15	4971.935		Co I	158	5001.128		N II	19
4945.458		Ni I	145	4972.16		A II	6	5001.15		Lu I	
4945.65		Fe I	1113	4972.39	P	Fe I	1096	5001.469		N II	19
4946.037		Ni I	148	4972.90	P	Fe I	631	5001.489		Ca II	15
4946.394		Fe I	687	4973.051		Ti I	173	5001.871		Fe I	965
4946.47		La II	36	4973.108		Fe I	984	5002.02		Fe III	
4947.58		V II	197	4973.16		V II	209	5002.12		La II	92
4947.91	P	Cr I	202	4973.4	P Forb	Na I	10	5002.320		V I	132
4947.994		Ti I	39	4973.896		Gd II	64	5002.692		N II	1
4948.183		Ti I	200	4974.47		Co I	92	5002.800		Fe I	687
4948.54		Fe III		4975.344		Ti I	283	5003.751		Ni I	50
4948.627		Sm II	49	4975.415		Fe I	586	5003.85	P	Fe I	211
4948.64	P	Cr I	202	4976.155		Ni I	112	5004.034		Fe I	1112
4948.77		Zr I	28	4976.345		Ni I	49	5004.187		Co I	141
4948.848		Fe II		4976.71	P	Ni I	254	5004.264		Fe II	
4949.45		A II	62	4977.6	P Forb	Na I	10	5004.38		Cr I	122
4949.58		Cr I	259	4977.653		Fe I	985	5004.907		Mn I	20
4949.76		La I	4	4977.731		Ti I	173	5005.140		N II	19,6
4950.112		Fe I	687	4978.11	P	Fe I	986	5005.160		Ne I	29
4951.66	P	V II	29	4978.191		Ti I	173	5005.18	P	Ti II	71
4952	P	N V	8	4978.541		Na I	9	5005.60		K II	2
4952.06		La II	92	4978.606		Fe I	966	5005.720		Fe I	984
4952.334		Ni I	113	4978.70	P	Fe I	1035	5006.126		Fe I	318
4952.371		Sm II	32	4979.58		Fe I	883	5006.169		W I	1
4952.646		Fe I	1068,1111	4979.84	P	Fe I	465	5006.71		S II	57
4952.78		Cr II		4980.161		Ni I	112	5006.72	P	Fe I	211
4953.179		Co I	14	4980.30	P	Cr I	123	5006.787		Cu II	10
4953.204		Ni I	111	4981.30	P	Cr I	123	5007.209		Ti I	38
4953.37	P	Ti I	39	4981.38	P	Ti II	71	5007.286		Co I	14
4953.714		Cr I	166	4981.732		Ti I	38	5007.289		Fe I	966,1065
4953.733		Cu II	9	4982.13		Y II	20	5007.316		N II	24
4953.979		Fe II	168	4982.507		Fe I	1067	5009.35		A II	6
4954.025		Gd II	114	4982.813		Na I	9	5009.54		S II	7
4954.16		C II	25	4983.258		Fe I	1067	5009.652		Ti I	5
4954.30	P	Fe I	1093	4983.63	P	Cr I	202	5010.045		Ni I	111
4954.33		P II	13	4983.855		Fe I	1066	5010.202		Ti II	113
4954.811		Cr I	166	4984.126		Ni I	143	5010.30	P	Fe I	211
4955.78		O II	33	4984.905		Gd II	64	5010.620		N II	4
4957.0334		Ne I	25	4985.261		Fe I	984	5010.821		Gd II	59
4957.15		Ba II	10	4985.46	P	Cr II	36	5010.961		Ni I	144
4957.302		Fe I	318	4985.503		Cu II	6	5011.24	P	Fe I	1066
4957.603		Fe I	318	4985.553		Fe I	318	5011.24		N II	64
4957.68	P	Fe I	1066	4985.60		As II	3	5012.026		N II	64
4958.26	P	Ti I	52	4985.98	P	Fe I	1094	5012.071		Fe I	16
4958.788		Gd II	64	4986.24		Fe I	1070	5012.16	P	Fe I	1070
4959.130		Nd II	1	4986.82		La II	22	5012.464		Ni I	111
4959.52		C II	25	4986.90	P	Fe I	1092	5012.611		Cu II	7
4959.682		Co I	14	4987.377		N II	24	5012.68	P	Fe I	1093
4961.396		Nd II	22	4987.62	P	Fe I	1094	5013.00		Ba II	10
4961.908		Fe I	845	4987.83	P	Fe I	966	5013.284		Ti I	173
4961.936		Sm II	41	4987.853		Co I	14	5013.316		Cr I	60
4962.10		Al II	80	4988.963		Fe I	1066	5013.38	P	Ti II	113
4962.263		Sr I	4	4989.140		Ti I	173	5013.712		Ti II	71
4962.564		Fe I	1097	4991.067		Ti I	38	5014.03		S II	15
4963.75		V II	221	4991.11	P	Fe II	25	5014.185		Ti I	5
4964.34	P	Cr II	36	4991.22		N II	64	5014.277		Ti I	38
4964.713		Ti I	173	4991.27		La II	57	5014.45		La II	159
4964.90		C II	25	4991.277		Fe I	1065	5014.620		V I	132
4964.928		Cr I	9	4991.86	P	Fe I	1094	5014.950		Fe I	965
4965.047		Gd II	143	4991.94		S II	7	5015.04		Gd I	6
4965.12		A II	14	4992.80	P	Fe I	1110	5015.30	P	Fe I	968
4965.14		Ni I	147	4993.355		Fe II	36	5015.675		He I	4
4965.40		V II	209	4993.51		S I		5016.162		Ti I	38
4965.881		Mn I	20	4993.687		Fe I	1111	5016.387		N II	19
4966.08	P	V II	29	4994.133		Fe I	16	5016.48	P	Fe I	1089
4966.096		Fe I	687	4994.14		Lu II	2	5016.60		V II	251
4966.30	P	Fe I	986	4994.358		N II	24,64	5017.16		A II	37
4966.581		Co I	14	4995.062		Ti I	216	5017.591		Ni I	111
4966.80		Cr I	259	4995.41	P	Fe I	1113	5017.63		A II	13
4967.30		Ti I	5	4995.52		Cl II	12	5018.02	P	Fe I	884
4967.40		O I	14	4995.65	P	Ni I	145	5018.294		Ni I	162
4967.551		Ni I	141	4995.89	P	Ti II	71	5018.43	P	Fe I	585
4967.86		O I	14	4996.82		La II	93	5018.434		Fe II	42
4967.899		Fe I	1067	4996.850		Ni I	144	5018.78		O I	13

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5019.18	P	Fe I	1242	5040.902		Fe I	1092,1094	5070.249		Sc I	13
5019.20		Cr I	20	5041.063		Si II	5	5070.957		Fe II	
5019.34		O I	13	5041.074		Fe I	16	5071.023		Gd II	114
5019.361		Gd II	81	5041.077		Ni I	158	5071.23		Hf II	23
5019.478		Fe II	168	5041.32	P	Fe I	1328	5071.40	P	Co I	14
5019.74	P	Fe I	966	5041.33	P	Fe I	1110	5071.475		Ti I	110
5019.855		V II	232	5041.620		Ca I	34	5072.077		Fe I	1089
5019.979		Ca II	15	5041.66		C I	4	5072.30		Ti II	113
5020.028		Ti I	38	5041.759		Fe I	36	5072.690		Fe I	1095
5020.13		O I	13	5042.195		Ni I	131	5072.920		Cr I	8
5020.368		Gd II	64	5042.589		Mn I	20	5073	P	N IV	17
5020.67	P	Fe I	629	5043.578		Ti I	38	5073.60		N II	10
5020.819		Fe I	748	5044.008		Ce II	16	5073.78		Fe III	5
5021	P	C IV	3	5044.221		Fe I	318	5074.063		Fe II	205
5021.141		Ca II	15	5044.8		C II	35	5074.757		Fe I	1094
5021.60	P	Fe I	1093	5045.098		N II	4	5075.17	P	Fe I	1089
5021.68	P	Fe I	1067	5045.400		Ti I	38	5075.304		Ce II	14
5021.894		Fe I	629	5046.61		Zr I	62	5075.814		Sc I	13
5021.903		Cr I	8	5047.14	P	Fe I	1242	5075.829		Fe II	
5022.244		Fe I	965	5047.2		C II	35	5075.92		Hf II	16
5022.82	P	Ti II	71	5047.28		S II	15	5076.15		Cr II	201
5022.871		Ce II	16	5047.308		V II	127	5076.288		Fe I	1089
5022.871		Ti I	38	5047.736		He I	47	5076.321		Ni I	143
5022.874		Fe II		5048.04		La II	90	5077.410		Co I	184
5023	P	C IV	3	5048.082		Ni I	161	5078.25		Cl II	16
5023.11		N II	64	5048.208		Ti I	199	5078.28		Zr I	62
5023.133		Gd II	64	5048.454		Fe I	984	5078.53	P	Fe I	744
5023.226		Fe I	1095	5048.752		Cr I	20	5078.711		Cr I	
5023.39		Ti I	199	5048.851		Ni I	195	5079.002		Fe I	1092
5023.476		Fe I	1150	5048.91		V II	209	5079.226		Fe I	66
5024.842		Ti I	38	5049.825		Fe I	114	5079.65		Hf II	71
5025.08	P	Fe I	1110	5050.13	P	Fe I	963	5079.681		Ce II	15
5025.54		Cr I	20	5050.878		Gd II	114	5079.742		Fe I	16
5025.570		Ti I	173	5051.29	P	Fe I	1089	5079.961		Ni I	60
5025.665		N II	19	5051.527		Ni I	144	5080.21		La II	80
5025.73	P	Fe I	466	5051.636		Fe I	16	5080.44		Hf II	83
5026.50		Ni I	158	5051.778		Cu II	7	5080.523		Ni I	143
5027.136		Fe I	1065	5051.900		Cr I	8	5080.95	P	Fe I	585
5027.19		S II	1	5052.122		C I	12	5081.111		Ni I	194
5027.212		Fe I	883	5052.879		Ti I	199	5081.39	P	Ti I	109
5027.34	P	Fe I	968	5052.97	P	Fe I	585	5081.554		Sc I	13
5027.51	P	Fe I	960	5053.300		W I	1	5081.86	P	Fe I	962
5027.66	P	Cr I	202	5054.070		Ti I	171,294	5081.920		Fe II	221
5027.785		Fe I	1110	5054.647		Fe I	884	5082.354		Ni I	130
5028.00		Cr I	122	5056.00		Fe I	1149	5082.68	P	Fe I	466
5028.129		Fe I	791	5056.020		Si II	5	5083.342		Fe I	16
5029.623		Fe I	718	5056.27		K II	3	5083.713		Sc I	13
5029.812		Mn I	20	5056.353		Si II	5	5084.081		Ni I	162
5030.740		Fe II		5056.856		Fe I	1111	5084.55	P	Fe I	932
5030.75		Fe III		5057.03		Hf II	71	5085.02		Al II	43
5030.784		Fe I	585	5057.49		Fe I	1067,1150	5085.333		Ti I	109
5031.019		Sc II	23	5057.83	P	Fe I	1185	5085.479		Ni I	130
5031.030		Fe I	746,883	5058.00		Fe I	967	5085.547		Sc I	13
5031.290		Gd II	114	5058.03		Ni I	141	5085.68	P	Fe I	1093
5031.562		Gd II	64	5058.18		Hf II	37	5085.695		Co I	14
5031.901		Fe I	1150	5058.50		Fe I	884	5085.824		Cd I	2
5032.41		S II	7	5060.079		Fe I	1,1095	5085.93	P	Fe I	963
5032.748		Ni I	207	5060.635		Cu II	1	5086.69		Fe III	5
5032.794		Fe II		5061.794		Fe II		5086.77	P	Fe I	1067
5033.2		C II	17	5062.07		A II	6	5086.951		Sc I	13
5034.06		Co I	91	5062.112		Ti I	199	5087.055		Ti I	109
5034.33		Hf II	26	5062.862		Gd II	64	5087.25		Fe II	
5034.415		Pr II	37	5062.91		La II	50	5087.42		Y II	20
5035.025		Fe I	885	5063.296		Fe I	1066	5088.16	P	Fe I	1066
5035.374		Ni I	143	5063.30		Fe III	5	5088.260		Cu II	6
5035.773		Fe II		5064.068		Ti I	294	5088.534		Ni I	190
5035.908		Ti I	110	5064.321		Sc I	13	5088.956		Ni I	162
5035.961		Ni I	145	5064.654		Ti I	5	5089.278		Fe II	
5036.294		Fe I		5064.69		Au I	1	5089.837		Nd II	46
5036.468		Ti I	110	5064.92		Zr I	62	5090.55		A II	122
5036.92		Fe II	36	5064.95	P	Fe I	1095	5090.56		La II	100
5036.931		Fe I	465	5065.020		Fe I	1094	5090.787		Fe I	1090
5037.0		C II	17	5065.201		Fe I	883	5091.14		Cr II	201
5037.33		Ta I	12	5065.448		Cu II	11	5091.282		Co I	14
5037.65		Ta I	2	5065.910		Cr I	60	5091.72	P	Fe I	745
5037.7505		Ne I	14	5065.985		Ti I	110	5091.73	P	Fe I	717
5037.81	P	Ti II	71	5066.28	P	Fe I	882	5091.890		Cr I	20
5038.400		Ti I	110	5066.99		La II	162	5092.251		Gd II	114
5038.599		Ni I	166	5067	P	N V	6	5092.797		Nd II	48
5038.81	P	Fe I	510	5067.082		Cu II	7	5093.41		Cr I	20
5038.87	P	Cr I	20	5067.162		Fe I	1092	5093.470		Fe II	205
5039.05		C I	4	5067.714		Cr I	60	5093.646		Fe II	
5039.259		Ni I	142	5067.82		Ni I	141	5093.65		Al II	43
5039.266		Fe I	687	5068.10		Cl II	16	5094.416		Ni I	164
5039.959		Ti I	5	5068.290		Cr I	20	5094.955		Co I	92
5040.25	P	Fe I	1093	5068.332		Ti I	294	5096.063		Gd II	59
5040.642		Ti I	38	5068.774		Fe I	383	5096.17	P	Fe I	1242
5040.744		Ru I	11	5069.12		Ti II	113	5096.716		Sc I	13
5040.76		N II	19	5069.351		Ti I	199	5096.874		Ni I	111
5040.82		Hf II	14	5069.60	P	Fe I	211	5096.998		Fe I	1092

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5097.29		Cr II	24	5123.723		Fe I	16	5146.06		O I	28,39
5097.375		Fe II		5124.05	P	Fe II	167	5146.12	P	Fe II	35
5098.34		Cl II	16	5124.17	P	Fe I	1035	5146.30	P	Fe I	1150
5098.38		Gd II	114	5124.60	P	Fe I	585	5146.478		Ni I	162
5098.594		Fe I	984	5124.718		Co I	197	5146.753		Co I	170
5098.703		Fe I	66	5124.98		Zr II	87	5147.09		Fe II	
5099.091		Fe I	965	5125.130		Fe I	1090	5147.483		Ti I	4
5099.228		Sc I	13	5125.211		Ni I	160	5148.061		Fe I	1090
5099.30		Cl II	16	5125.56		Gd II	99	5148.19	P	Fe II	52
5099.322		Ni I	141	5125.715		Co I	181	5148.234		Fe I	1095
5099.946		Ni I	161	5125.84		A II	122	5148.65		Ni I	158
5100.34		Al II	43	5126.13		S II	57	5148.724		V I	123
5100.66	P	Fe II	35	5126.19	P	Fe II	53	5148.838		Na I	8
5100.704		Fe II		5126.201		Co I	170	5149.13		Mn I	32
5100.706		Fe III		5126.218		Fe I	1089	5149.33		Fe III	
5100.840		Fe II	185	5126.598		Fe I	961	5149.538		Fe II	
5100.937		Gd II	114	5127.32		Fe III	5	5149.796		Co I	39
5100.95		Fe II		5127.363		Fe I	16	5149.841		Gd II	115
5101.121		Sc I	13	5127.367		Ti I	230	5150.19	P	Fe I	789
5101.48		Fe II		5127.68	P	Fe I	1	5150.843		Fe I	16
5102.24	P	Fe I	65	5127.866		Fe II	167	5150.86		Al III	14
5102.971		Ni I	49	5128.03		Ni I	113	5150.890		Mn I	32
5103.04		Cl II	16	5128.53		Hf II	58	5150.93	P	Fe II	35
5103.30		S II	7	5128.530		V I	123	5151.08		C II	16
5103.45		Gd I	6	5129.143		Ti II	86	5151.83		Cr I	19
5104.03	P	Cr II	38	5129.383		Ni I	159	5151.87		V II	196
5104.038		Fe I	465	5129.520		Pr II	38	5151.915		Fe I	16
5104.08		Cl II	16	5129.658		Fe I	965	5152.185		Ti I	4
5104.21		Fe I	1092	5130.28		Gd II	115	5152.20		P II	7
5104.45		N II	34	5130.389		Ni I	177	5153.235		Cu I	7
5104.47	P	Fe I	1090	5130.53		O I	29,39	5153.402		Na I	8
5105.541		Cu I	2	5130.596		Nd II	75	5153.49		Cr II	21
5105.80		As II	4	5130.91	P	Fe I	1149	5154.061		Ti II	70
5106.23		La I	9	5131.28	P	Ti II	86	5154.40	P	Fe II	35
5106.233		V II	127	5131.475		Fe I	66	5155.136		Ru I	10
5107.406		Gd II	81	5131.770		Ni I	114	5155.140		Ni I	206
5107.452		Fe I	16	5132.19		V II	127	5155.764		Ni I	210
5107.54		La II	164	5132.67	P	Fe II	35	5155.845		Gd I	6
5107.645		Fe I	36	5132.931		Ti I	230	5156.0		Fe III	5
5107.70		Cr I	19	5132.96		C II	16	5156.040		Sr I	11
5107.80		As II	6	5133.22	P	Fe I	818	5156.06		Hf II	83
5108.903		Co I	181	5133.29		C II	16	5156.10		Fe II	
5108.91		Gd II	114	5133.42		Zr I	27	5156.366		Co I	180
5108.93		Cr I	60	5133.467		Co I	180	5156.74		La II	7
5109.427		Ti I	109	5133.692		Fe I	1092	5156.76		Gd II	114
5109.662		Fe I	1089	5135.10		Lu I	2	5157.28		V II	127
5110.36	P	Fe I	790	5135.125		Pr II	37	5157.43		La II	97
5110.382		Pr II	38	5136.09		Fe I	1036	5157.993		Ni I	111
5110.414		Fe I	1	5136.47		Ta I	5	5158.187		Al II	58
5110.43		Cr II	199	5136.788		Fe II	35	5158.854		Co I	188
5110.61		Hf II	106	5137.075		Ni I	48	5159.066		Fe I	1091
5110.751		Cr I	60	5137.09		Cr II	201	5159.350		V I	123
5110.768		Pr II	35	5137.26		C II	16	5159.93		Fe II	
5111.930		Gd II	114	5137.388		Fe I	1090	5159.95	P	Fe I	1095
5112	P	O VI	12	5137.94		Cr I	207	5160.02		O II	32
5112.28		Zr II	95	5138.431		V I	123	5160.105		Gd II	115
5112.490		Cr I	19	5138.71		Cr I	19	5160.824		Fe II	167
5113.130		Cr I	60	5139.21		C II	16	5160.896		Gd II	115
5113.232		Co I	91	5139.255		Ni I	129	5161.18	P	Fe II	35
5113.36		Cl II	16	5139.260		Fe I	383	5161.765		Cr I	60
5113.448		Ti I	109	5139.468		Fe I	383	5162.288		Fe I	1089
5114	P	O V	1	5139.654		Cr I	207	5162.34		Cl II	33
5114.07		C II	51	5140.839		Gd II	115	5162.38	P	Fe I	210
5114.10		Fe III	5	5141.55	P	Fe I	930	5162.47		Gd II	140
5114.52	P	Fe I	1242	5141.63		Ta I	6	5162.80		A II	126
5114.55		La II	36	5141.750		Fe I	114	5162.93	P	Ni I	159
5115.397		Ni I	177	5141.84		A II	37	5163.61		La II	7
5115.788		Fe I	789	5142.263		Cr I	60	5163.74		Fe III	2
5116.06		Cr II	24	5142.33		S II	1	5163.90		Al III	19
5116.700		Sm II	56	5142.541		Fe I	1090,1092	5164.542		Gd II	97
5117.107		Fe II		5142.763		Ru I	11	5164.56		Fe I	1166
5117.175		Ce II	23	5142.771		Ni I	161	5164.56		Hf II	83
5117.937		Mn I	32	5142.932		Fe I	16	5164.69	P	Fe II	167
5119.12		Y II	20	5142.98	P	Ni I	113	5164.70	P	Fe I	210
5119.55		C II	51	5143.49		C II	16	5164.922		Fe I	1033
5119.90	P	Fe I	960	5143.73	P	Fe I	65	5165.140		Nd II	77
5120.34	P	Fe II	35	5144.413		Al II	68	5165.156		Co I	39
5120.420		Ti I	288	5144.47	P	Cr II	38	5165.422		Fe I	1089
5120.89	P	Fe I	1150	5144.672		Cr I	60	5165.82		A II	75
5121.570		Ni I	177	5144.875		Al II	68	5166.227		Cr I	207
5121.646		Fe I	1095	5144.9376		Ne I	34	5166.286		Fe I	1
5121.69		C II	12	5144.998		Al II	68	5167.28		La II	95
5121.96	P	Fe I	745	5145.011		Ne I	34	5167.3216		Mg I	2
5122.082		Ti I	230	5145.105		Fe I	66	5167.491		Fe I	37
5122.121		Cr I	19	5145.16		C II	16	5167.70	P	Fe I	717
5122.767		Co I	170	5145.36		A II	13	5167.96		Cr I	207
5122.99		La II	36	5145.42		La I	9	5168.18	P	Fe I	964
5123.21		Y II	21	5145.465		Ti I	109	5168.19	P	Fe I	960
5123.28	P	Fe I	1150	5145.654		Al II	68	5168.24		N II	70
5123.465		Cr I	20	5145.73	P	Fe I	931	5168.63		Cr I	19

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5168.660		Ni I	112	5191.60		Zr II	95	5214.64		Cr I	189
5168.901		Fe I	1	5192.000		Cr I	201	5215.185		Fe I	553
5169.030		Fe II	42	5192.350		Fe I	383	5215.29		Cr I	206
5169.30	P	Fe I	1032	5192.524		Ni I	111	5215.928		V II	55
5169.733		Fe II		5192.621		Nd II	75	5216.17		Cr I	189
5170.08	P	Fe I	1241	5192.75		Si II		5216.278		Fe I	36
5170.08		N II	70	5192.971		Ti I	4	5216.512		Ni I	113
5171.028		Ru I	11	5193.004		V I	125	5216.84		A II	126
5171.13	P	V II	115	5193.03		Cl II	33	5216.99		Fe III	
5171.46		N II	70	5193.43	P	V II	115	5217.36	P	V II	115
5171.599		Fe I	36	5193.488		Cr I	206	5217.395		Fe I	553
5171.62	P	Fe II	35	5193.89		Fe III	5	5217.69	P	Fe I	965
5172.21	P	Fe I	210	5194.043		Ti I	183	5217.83		La II	
5172.32		N II	66	5194.43		Fe III	5	5217.927		Fe I	880
5172.6		Al III	18	5194.57		Hf II	69	5217.93		Cl II	3
5172.6843		Mg I	2	5194.824		V I	125	5218.202		Cu I	7
5172.89		La II	100	5194.943		Fe I	36	5218.51	P	Fe I	1240
5173.002		Fe II	185	5195.110		Pr II	38	5219.008		Co I	170
5173.15		Cl II	33	5195.307		Pr II	38	5219.053		Pr II	37
5173.37		N II	66	5195.394		V I	125	5219.40		Gd I	6
5173.742		Ti I	4	5195.471		Fe I	1092	5219.697		Ti I	4
5173.83		La II	158	5196.100		Fe I	1091	5220.070		Cu I	7
5173.898		Pr II	35	5196.24	P	Fe I	406	5220.113		Pr II	35
5174.46		N II	70	5196.43		Y II	28	5220.297		Gd II	80
5175.71	P	Fe I	1	5196.443		Cr I	207	5220.307		Ni I	114
5175.78	P	Ni I	188	5196.57		Cr I	207	5220.912		Cr I	201
5175.839		Gd II	114	5196.591		Mn I	32	5221.34		Cl II	3
5175.85		Cl II	50,81	5197.165		Ni I	204	5221.43	P	Fe I	1
5175.89		N II	66	5197.216		Mn I	32	5221.75	P	Fe I	628
5176.00		O II	32	5197.569		Fe II	49	5221.753		Cr I	193
5176.085		Co I	92	5197.768		Gd I	6	5222.39		Cr I	206
5176.26	P	Cr II	38	5197.93	P	Fe I	1091	5222.40	P	Fe I	112
5176.28		A II	37	5198.714		Fe I	66	5222.676		Cr I	59
5176.285		Gd II	60	5198.843		Fe I	743	5222.685		Ti I	183
5176.565		Ni I	209	5198.89		S II	57	5223.191		Fe I	880
5177.230		Fe I	930	5199.211		Gd II	115	5223.623		Ti I	183
5177.30		La I	9	5199.50		N II	66	5224.082		Cr I	201
5177.430		Cr I	201	5199.68		V II	55	5224.14	P	Ti I	37
5177.73		Fe III		5200.188		Cr I	201	5224.30	P	Fe I	65
5177.83		Cr I	206	5200.42		Y II	20	5224.301		Ti I	183
5178.104		Gd II	114	5200.549		Gd II	147	5224.541		Cr I	59,193
5178.71	P	Fe II	35	5201.00		S II	39	5224.558		Ti I	183
5178.798		Fe I	1166	5201.096		Ti I	183	5224.680		W I	1
5178.843		Gd II	147	5201.32		S II	39	5224.928		Ti I	183
5178.95	P	Fe II	35	5202.27		Fe I	1090	5224.94		Zr I	27
5179.136		Ni I	202	5202.339		Fe I	66	5224.941		Cr I	201
5179.50		N II	66,70	5202.51		Si II		5225.032		Cr I	201
5179.919		Gd II	100	5202.94		V II	142	5225.533		Fe I	1
5180.065		Fe I	1166	5203.86		P III	5	5225.821		Cr I	58
5180.34		N II	66	5204.14		La II	96	5226.06		Fe I	716
5180.53	P	Fe II	35	5204.46		A II	126	5226.20		La II	96
5181.77		Si II		5204.518		Cr I	7	5226.42	P	Fe I	406
5181.86		Hf I	1	5204.582		Fe I	1	5226.534		Ti II	70
5181.97	P	Fe II	53	5204.95	P	Fe I	407	5226.868		Fe I	383
5181.995		Zn I	7	5205.31	P	Fe I	1112	5226.891		Cr I	193
5183.21		N II	70	5205.73		Y II	20	5227.10		Cr I	59
5183.41		Cr I	19	5206.039		Cr I	7	5227.15	P	Fe I	114
5183.42		La II	36	5206.059		Ti I	276	5227.192		Fe I	37
5183.6042		Mg I	2	5206.15	P	Cr I	59	5227.53		Fe III	
5183.72		Ti II	86	5206.52	P	Cr I	206	5227.70		V II	115
5184.17	P	Fe I	1147	5206.562		Pr II	38	5227.75		Cr I	58
5184.292		Fe I	1089	5206.73		O II	32	5227.87	P	Ti II	103
5184.585		Ni I	159	5206.80	P	Fe I	1095	5228.082		Cr I	193
5184.590		Cr I	201	5207.852		Ti I	183	5228.408		Fe I	1091
5184.97		N II	66	5207.95	P	Fe I	880	5228.427		Nd II	46
5185.09		Si II		5208.07	P	Cr I	59	5229.57		Fe III	113
5185.90		Ti II	86	5208.436		Cr I	7	5229.857		Fe I	553,1090
5186.17		N II	70	5208.601		Fe I	553	5230.210		Co I	39
5186.329		Ti I	183	5209.90	P	Fe I	584	5230.228		Cr I	58
5186.592		Ni I	205	5210.042		Co I	167	5230.363		Co I	187
5186.915		Gd II	114	5210.386		Ti I	4	5230.967		Ti I	215
5187.237		Gd II	114	5210.488		Gd II	115	5231.41		Fe I	787
5187.452		Ce II	15	5210.834		Co I	187	5232.50		Cr II	43
5187.75		Hf II	23	5210.87		Cr II	24	5232.946		Fe I	383
5187.86		Ni I	159	5210.88	P	Cr II	38	5233.817		Ti I	37
5187.922		Fe I	1032	5211.22	P	Ti I	37	5234.088		V I	131
5188.21		La II	95	5211.544		Ti II	103	5234.195		Nd II	74
5188.700		Ti II	70	5211.832		Co I	184	5234.27		La I	10
5188.848		Ca I	49	5211.85		La I	9	5234.28	P	V II	55
5189.61	P	Ti I	215	5212.27		Cr I	189	5234.620		Fe II	49
5189.70		Cl II	33	5212.271		Ti I	215	5235.188		Co I	83
5190.42		N II	66	5212.365		Nd II	44	5235.3		Fe III	113
5190.56		O II	32	5212.61		S II	39	5235.392		Fe I	210,1031
5191.081		Gd II	115	5212.699		Co I	170	5235.45		Ni I	208
5191.41		P II	7	5212.75		Ta I	1	5236	P	N IV	5
5191.448		Nd II	45	5212.997		Ti I	215	5236.189		Fe I	1034
5191.46		Cr II	24	5213.08	P	V II	55	5236.38	P	Fe I	1146
5191.460		Fe I	383	5213.35	P	Fe I	1165	5236.63		Cr I	205
5191.58	P	Fe II	52	5213.80	P	Fe I	962	5237.34		Cr II	43

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5238.25	P	Fe I	962	5261.754		Cr I	237	5278.955		Fe II	184
5238.560		Ti I	37,183	5262.104		Ti II	70	5278.99		S I	4
5238.58	P	Fe II	41	5262.244		Ca I	32	5279	P	O VI	14
5238.971		Cr I	59	5262.48	P	Fe II	52	5279.11		La II	90
5239.823		Sc II	26	5262.61	P	Fe I	1149	5279.65	P	Fe I	584
5239.942		Ti I	37	5262.89	P	Fe I	628	5279.92		Cr II	43
5240.36	P	Fe I	584	5263.314		Fe I	553	5280.00		V II	195
5240.468		Cr I	237	5263.483		Ti I	183	5280.08		Cr II	43
5240.878		V I	131	5263.750		Cr I	309	5280.21		Al II	95
5240.94		Cr I	193	5263.874		Fe I	788	5280.289		Cr I	192
5240.97	P	V II	55	5263.99		V II	115	5280.364		Fe I	880
5241.19		V II	241	5264.14		Mg II	17	5280.62	P	V II	55
5241.458		Cr I	59	5264.152		Cr I	18	5280.631		Co I	172
5241.90	P	Fe I	1150	5264.239		Ca I	22	5280.91	P	Fe I	210
5242.495		Fe I	843	5264.49	P	V II	55	5281	P	N IV	5
5243.3		Fe III	113	5264.801		Fe II	48	5281.18	P	Fe I	1240
5243.395		Cr I	201	5264.95		Hf II	70	5281.18		N I	14
5243.50	P	Cr II	38	5265.160		Cr I	201	5281.692		Ni I	231
5243.798		Fe I	1089	5265.25	P	Fe I	407	5281.796		Fe I	383
5244.5		C III	4	5265.42	P	Fe I	1145	5282.1		Fe III	113
5245	P	N IV	5	5265.523		Co I	38	5282.378		Ti I	74
5245.49		A II	40	5265.557		Ca I	22	5282.52		N III	15
5245.62	P	Fe I	1149	5265.710		Ce II	23	5283.076		Gd I	6
5245.72	P	Fe I	715	5265.722		Cr I	18	5283.441		Ti I	156
5246.00	P	Fe I	628	5265.748		Ni I	141	5283.628		Fe I	553
5246.143		Ti I	282	5265.786		Co I	170	5283.77		Al II	95
5246.574		Ti I	37	5265.94	P	Fe I	210	5284.092		Fe II	41
5246.75		Cr II	23	5265.967		Ti I	156	5284.27	P	Fe I	875
5247.052		Fe I	1	5266.118		V I	139	5284.380		Ti I	74
5247.10		Hf II	92	5266.302		Co I	172	5284.416		Fe I	842
5247.293		Ti I	183	5266.49	P	Ti I	36	5284.62	P	Fe I	1032
5247.564		Cr I	18	5266.506		Co I	83	5284.85		Fe III	
5247.921		Co I	39	5266.562		Fe I	383	5285.12	P	Fe I	1166
5248.028		Fe II		5267.10		Cr II	38	5285.34		Ca II	14
5248.402		Ti I	37,156	5267.28	P	Fe I	1146	5285.38		Cr I	285
5249.099		Fe I	1166	5267.322		Gd II	60	5285.48		Cl II	32
5249.22		V II	220	5268.06		O III	19	5285.60	P	Fe I	961
5249.40		Cr II	23	5268.348		Ni I	273	5285.63		Cr I	192
5249.43		C II	30	5268.498		Co I	172	5285.752		Sc I	23
5249.585		Nd II	75	5268.62		Ti II	103	5285.85		Al II	102
5249.6		C III	23	5269.15		Fe III	112	5286.42	P	V II	54
5250.003		Co I	190	5269.541		Fe I	15	5286.74		Fe III	110
5250.212		Fe I	1	5269.93		Ti I	156	5286.92		A II	13
5250.650		Fe I	66	5270.06	P	Fe I	877	5287.188		Cr I	225
5250.816		Nd II	80	5270.270		Ca I	22	5287.574		Co I	175
5250.95		Ti I	37	5270.322		Be II	3	5287.62		Cr I	309
5251.180		Gd I	6	5270.360		Fe I	37	5287.785		Co I	187
5251.49		Ti I	37	5270.59		N III	15	5288.21	P	Ni I	202
5251.738		Pr II	20	5270.843		Be II	3	5288.24	P	Fe I	818
5252.04	P	Ti II	103	5271.18		La I	4	5288.31		V II	195
5252.105		Ti I	4	5271.26	P	V II	55	5288.38	P	Fe I	406
5252.14		Gd II	99	5272.0		Fe III	113	5288.533		Fe I	929
5253.03	P	Fe I	113	5272.010		Cr I	225	5289	P	O VI	16
5253.25	P	Fe I	875	5272.413		Fe II	185	5289.27		Cr I	192
5253.479		Fe I	553	5272.56		C III	4	5289.28		Ti I	36
5253.49		P II	10	5272.60		N III	15	5289.82		Y II	20
5253.55		C II	30	5272.86		Fe III		5289.98		Hf II	100
5253.55		C III	4	5273	P	N V	4	5290.74		V II	207
5254.652		Co I	187	5273.176		Fe I	553	5290.79	P	Fe I	1147
5254.918		Cr I	201	5273.379		Fe I	114	5290.83		La II	6
5254.92	P	Fe II	49	5273.431		Nd II	75	5291	P	O VI	18
5254.956		Fe I	1	5273.439		Cr I	201	5291.78		Fe III	
5255.132		Cr I	225	5273.62	P	Fe I	1147	5292	P	O VI	17
5255.325		Mn I	32	5274.244		Ce II	15	5292.10		Pr II	24
5255.510		Nd II	43	5274.99		Cr II	43	5292.630		Pr II	37
5255.68	P	Fe I	1089	5275.00		Fe I	1029	5292.861		Mn I	36
5255.76	P	Fe I	1091	5275.08		O I	27	5292.865		Cr I	205
5255.805		Gd I	6	5275.11	P	Cr I	192	5293.03	P	Fe I	1165
5255.811		Ti I	183	5275.171		Cr I	94	5293.168		Nd II	75
5256.030		Gd II	114	5275.30	P	Fe I	742	5293.383		Cr I	192
5256.89	P	Fe II	41	5275.54		Re I	1	5293.973		Fe I	1031
5257.07		Cr I	205	5275.65		V II	195	5294.216		Mn II	11
5257.36		C II	30	5275.689		Cr I	94	5294.555		Fe I	875
5257.51	P	V II	55	5275.994		Fe II	49	5294.97		Si II	
5257.621		Co I	188	5276.03		Cr I	94	5295.292		Mn II	11
5257.65	P	Fe I	788	5276.183		Co I	190	5295.30	P	Sc II	22
5258.333		Sc I	23	5276.2		Fe III	113	5295.316		Fe I	1146
5259.09	P	Fe I	1149	5276.42		Al II	67	5295.781		Ti I	74
5259.38		La II	21	5276.81		Al II	67	5296.09		P II	7
5259.62		C II	30	5276.879		Nd II	81	5296.48		A II	110
5259.743		Pr II	35	5277.31	P	Fe I	1149	5296.686		Cr I	18
5259.976		Ti I	298	5277.32	P	Fe I	584	5296.968		Mn II	11
5260.25		Fe III		5277.40		Zr I	27	5297.236		Ti I	156
5260.375		Ca I	22	5277.59	P	Fe I	983	5297.360		Cr I	94
5260.44		Hf II	36	5277.68		Al II	67	5297.86		N III	15
5260.771		Mn I	32	5278.10		S I	4	5297.976		Cr I	94
5260.91		Al III	13	5278.262		Cr I	309	5298	P	O VI	15
5260.91		N III	15	5278.265		Fe II	225	5298.06		Hf II	49
5261.49	P	Fe I	406	5278.62		Al II	95	5298.269		Cr I	18
5261.706		Ca I	22	5278.70		S I	4	5298.429		Ti I	281

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5298.44	P	Cr I	94	5322.78	P	Cr II	24	5346.56	P	Fe II	49
5298.789		Fe I	875	5322.81		V II	240	5347.499		Co I	196
5298.93		N III	15	5323.51	P	Fe I	113	5347.71	P	Ni I	145
5299.00		O I	26	5323.958		Ti I	36	5347.806		Ce II	227
5299.278		Mn II	11	5324.185		Fe I	553	5348.069		Mn I	36
5299.85		Hf II	14	5324.26		Hf II	36	5348.319		Cr I	18
5299.9		Fe III	113	5324.61		Al II	101	5348.40		Hf II	22
5300.012		Ti I	74	5325.276		Co I	192	5348.67		Gd I	6
5300.41	P	Fe I	1240	5325.559		Fe II	49	5349.08		Ta I	5
5300.749		Cr I	18	5325.71	P	V II	54	5349.294		Sc I	17
5301.042		Co I	39	5325.949		Co I	194	5349.472		Ca I	33
5301.33	P	Fe I	1162	5326.154		Fe I	407,785	5349.702		Sc I	4
5301.67		Gd I	6	5326.247		Co I	175	5349.742		Fe I	1163
5301.936		Sc I	4	5326.793		Fe I	1147	5349.75		V II	54
5301.97		La II	36	5327.25	P	Fe I	875	5350.10		Zr II	115
5302.279		Nd II	80	5327.45	P	N II	69	5350.36		Zr II	115
5302.307		Fe I	553	5327.86	P	Fe I	1145	5350.37		V II	54
5302.320		Mn II	11	5328.042		Fe I	15	5350.38		Gd I	7
5302.5		Fe III	113	5328.339		Cr I	94	5350.527		Tl I	1
5302.62		La II	86	5328.38		Ta I	2	5351.072		Ti I	300
5302.76		Gd I	6	5328.534		Fe I	37	5351.21		N II	69
5303.26		V II	54	5328.70		N I	13	5351.85	P	Ni I	177
5303.419		Fe II	225	5328.70	P	Ni I	129	5352	P	O V	13
5303.43		Gd II	80	5328.98		O I	12	5352.046		Co I	172
5303.54		La II	36	5329.12		Cr I	94	5353.26		Gd I	7
5304.11	P	Fe I	983	5329.59		O I	12	5353.386		Fe I	1062
5304.211		Cr I	225	5329.719		Cr I	94	5353.415		Ni I	70
5304.26	P	Fe II	184	5329.994		Fe I	1028	5353.500		Co I	198
5304.923		Gd II	62	5330.582		Ce II	13	5353.534		Ce II	15
5305.3	P	O IV	11	5330.66		O I	12	5353.78		Fe III	
5305.41	P	Fe I	877	5330.779		Ne I	9	5354.01	P	Co I	91
5305.77		A II	93	5331.20	P	Fe I	817	5354.66	P	Cr II	29
5305.85		Cr II	24	5331.456		Co I	39	5354.67		Ta I	6
5306.6		Fe III	113	5331.48	P	Fe I	210	5355.752		Sc I	19
5307.121		Tm I		5331.54		As II	3	5356.100		Sc I	17
5307.281		Cr I	237	5332.65		V II	54	5356.14		Cl II	
5307.30		Ca II	14	5332.652		Co I	170	5356.77		N I	13
5307.30		Gd I	6	5332.673		Fe I	1031	5356.976		Nd II	80
5307.365		Fe I	36	5332.903		Fe I	36	5357.195		Sc II	30
5307.53	P	Mn I	36	5333.15	P	Fe I	1023	5357.35		V II	54
5308.44		Cr II	43	5333.30		Gd I	7	5357.790		Gd II	62
5308.71	P	Fe I	1091	5333.647		Co I	190	5358.10	P	Fe I	628
5309.267		Ru I	10	5333.70		Cl II	15	5359.200		Co I	194
5309.47		Cr I	285	5333.77	P	Fe I	464	5361.174		Nd II	46
5310.219		Co I	196	5334.228		Sc II	30	5361.35		Ba II	6
5310.70		Cr II	43	5334.32	P	Fe I	1064	5361.474		Nd II	74
5310.76		Al II	94	5334.804		Mn I	36	5361.637		Fe I	1143
5311.42		Zr I	27	5334.821		Co I	191	5361.724		Ti I	35
5311.461		Nd II	80	5334.88		Cr II	43	5362.4	P	O IV	11
5311.60		Hf II	37	5336.163		Co I	191	5362.56		Zr I	27
5311.78		Zr II	95	5336.7		C II	11	5362.69		S II	61
5312.32		Al II	94	5336.809		Ti II	69	5362.781		Co I	198
5312.650		Co I	197	5337.713		Fe II	48	5362.864		Fe II	48
5312.878		Cr I	225	5337.79		Cr II	43	5362.98		Cr I	258
5313.239		Ti I	74	5338.326		Ti I	35	5363.80		Fe III	
5313.41		Fe I	1239	5338.66		N II	69	5364.874		Fe I	1146
5313.43		N II	69	5339.29		Ca II	20	5365.403		Fe I	786
5313.59		Cr II	43	5339.40	P	Fe I	1162	5366.651		Ti I	35
5313.76	P	Ti II	81	5339.528		Co I	199	5367.470		Fe I	1146
5313.839		Fe I	1238	5339.92		Fe III		5367.53	P	V II	53
5314.45		N III	15	5339.935		Fe I	553	5367.78		Cr I	258
5315.07		Fe I	1147	5340.20		N II	69	5367.95	P	Ti II	80
5315.618		Fe II	225	5340.437		Cr I	225	5368.10	P	Cr II	29
5315.78	P	Fe I	877	5340.66		La II	91	5368.546		Cr I	258
5316.07		Al II	94	5340.68		Ti I	36	5368.904		Co I	167
5316.07		P II	6	5340.92		Fe III		5368.97		Pt I	6
5316.609		Fe II	49	5341.026		Fe I	37	5369.25	P	Cr II	29
5316.772		Co I	192	5341.040		Sc I	19	5369.591		Co I	39
5316.777		Fe II	48	5341.065		Mn I	4	5369.635		Ti I	
5317.095		Mn I	36	5341.096		Ne I	9	5369.965		Fe I	1146
5317.394		Fe I	584	5341.22		V II	239	5370.356		Cr I	
5317.53	P	Fe I	1032	5341.328		Co I	199	5371.43	P	Fe I	1163
5318.025		Fe II		5341.492		Ti I	316	5371.48		Cr I	258
5318.04	P	Fe I	406	5342.05	P	Sc II	30	5371.493		Fe I	15
5318.267		Fe II		5342.703		Co I	190	5371.621		Gd II	60
5318.337		Sc II	22	5342.961		Sc I	4	5371.84		Al II	42
5318.41		Cr II	23	5343	P	O V	13	5371.935		Nd II	79
5318.61	P	V II	53	5343.00		Gd I	7	5372.216		Gd II	99
5318.775		Cr I	225	5343.284		Ne I	9	5372.66		N I	13
5319.22	P	Fe I	1029	5343.383		Co I	190	5373.704		Fe I	1166
5319.818		Nd II	75	5344.570		Co I	191	5373.715		Cr I	258,302
5320.048		Fe I	877	5344.73		P II	6	5374.78	P	Fe I	785
5320.70		S II	38	5344.761		Cr I	225	5375.346		Sc I	19
5320.78		Y II	20	5345.61	P	Cr I	225	5375.393		Gd II	99
5320.96		N II	69	5345.67		S II	38	5375.68		Fe III	
5321.106		Fe I	1165	5345.807		Cr I	18	5376	P	O V	13
5321.496		Gd I	6	5346.12	P	Cr II	24	5376.59	P	Ti I	3
5321.777		Gd I	6	5346.30		Hf II	92	5376.849		Fe I	1132
5322.049		Fe I	112	5346.34	P	Fe I	817	5377.08		La II	95
5322.778		Pr II	35	5346.54		Cr II	23	5377.628		Mn I	42

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5378.07	P	Cr II	29	5405.778		Fe I	15	5435.79	P	Fe II	48
5378.12		P II	23	5406.36	P	Fe I	1026	5435.871		Ni I	70
5379.19	P	Ti II	102	5406.77	P	Fe I	1148	5436.299		Fe I	1161
5379.580		Fe I	928	5407.424		Mn I	4	5436.594		Fe I	113
5380.242		C I	11	5407.44		A II		5436.703		Ti I	51
5380.97		La II	56	5407.520		Co I	192	5436.80		Fe III	110
5381.020		Ti II	69	5407.62		Cr II	23	5436.83		O I	11
5381.105		Co I	56	5408.119		Co I	112	5437.19	P	Fe I	1145
5381.262		Pr II	37	5408.59		O I	53	5438.04	P	Fe I	1237
5381.77		La II	91	5408.842		Fe II	184	5438.310		Ti I	108
5381.776		Co I	196	5408.940		Ti I	3	5438.41		Si II	
5381.91		La II	91	5409.125		Fe I	1147	5439.30		V II	53
5382.52	P	Fe II	184	5409.224		Ce II	23	5440.53	P	Ti I	107
5382.750		Fe I	741	5409.28	P	Cr II	29	5441.17		Gd II	146
5382.96	P	Ti I	155	5409.609		Ti I	155	5441.321		Fe I	1144
5383.374		Fe I	1146	5409.66		P II	6	5442.274		Nd II	76
5383.82		N II	23	5409.791		Cr I	18	5442.413		Cr I	204
5384.22	P	Fe I	817	5410	P	O VI	13	5443.41	P	Fe I	1059
5384.634		Ti I	35	5410.39	P	Cr II	29	5443.42		Cl II	2
5384.89		V II	53	5410.76		O I	51,52	5443.88		Fe III	110
5385.14		Zr I	26	5410.913		Fe I	1165	5444.07		Hf II	69
5385.28		Cr I		5411.227		Ni I	222	5444.096		Mn I	31
5385.58	P	Fe I	927	5411.39	P	Fe I	870	5444.25		Cl II	2
5386.341		Fe I	1064	5411.524		He II	2	5444.585		Co I	196
5386.87		P II	6	5412.56	P	Fe I	1237	5444.99		Cl II	2
5386.958		Fe I	875	5412.80	P	Fe I	1162	5445.045		Fe I	1163
5386.978		Cr I	191	5413.47		Ta I	5	5445.97	P	Fe II	53
5387.136		Fe II		5413.687		Mn I	42	5446.46	P	Ti II	68
5387.35		Fe III		5414.089		Fe II	48	5446.57	P	Cr II	35
5387.51		Fe I	1031	5414.91	P	Fe I	874	5446.58	P	Fe I	1144
5387.573		Cr I	191	5415.201		Fe I	1165	5446.593		Ti I	3,259
5388.350		Ni I	70	5415.277		V I	130	5446.76		Cr I	204
5388.48		Al II	34	5416.381		Nd II	80	5446.87	P	Fe I	37
5388.521		Mn I	36	5417	P	O V	13	5446.920		Fe I	15
5389.180		Ti I	35	5417.03		Fe I	1148	5447.59		La II	112
5389.461		Fe I	1145	5418.01		Zr II	94	5448.882		Ti I	259
5389.996		Ti I	155	5418.802		Ti II	69	5449.155		Ti I	107
5390.394		Cr I	191	5419.189		Ti I	258	5450.66		P II	23
5391.06	P	Ti I	155	5419.19		Ta I	6	5450.836		Sr I	9
5391.350		Cr I	191,302	5419.36		Cr II	22,29	5451.115		Nd II	
5391.36		Hf II	48	5419.876		Gd II	99	5451.60	P	Fe II	184
5391.493		Fe I	1062	5420.362		Mn I	4	5451.965		Ti I	265
5391.60		Ba II	6	5420.90		Cr II	23	5452.03		Ti II	109
5391.78	P	Fe I	270	5421.05		Ba II	6	5452.119		Fe I	870
5392.075		Sc I	19	5421.40	P	Fe I	874	5452.12		N II	29
5392.12		Cl II	28	5421.559		Nd II	79	5452.305		Co I	175
5392.371		Ni I	250	5421.85	P	Fe I	1183	5453.255		Ni I	231
5392.95	P	Cr II	29	5422.15	P	Fe I	1145	5453.338		Co I	194
5393.174		Fe I	553	5422.47		Ti II	80	5453.616		Ti I	108
5393.391		Ce II	24	5423.25		Cl II	2	5453.81		S II	6
5393.659		Gd II	100	5423.52		Cl II	2	5453.98	P	Fe I	1064
5394.321		Gd II	63	5423.73	P	Fe I	927	5454.05	P	Ti II	68
5394.674		Mn I	1	5423.82		La II	7	5454.26		N II	29
5394.682		Fe I	1031	5424.072		Fe I	1146	5454.41		A II	
5395.25		Fe I	1143	5424.15	P	Fe I	1026	5454.573		Co I	195
5395.41	P	Cr II	29	5424.36		Cl II	2	5455.09	P	Fe I	627
5396.3		Ti II	80	5424.551		Ba I	9	5455.11		La I	3
5396.59	P	Ti II	102	5424.56	P	Ni I	231	5455.433		Fe I	1145
5396.600		Ti I	3	5424.654		Ni I	70	5455.613		Fe I	15
5396.90	P	Fe I	464	5425.269		Fe II	49	5455.80		Cr II	50
5397.093		Ti I	155	5425.29	P	Cr II	29	5455.815		Nd II	83
5397.131		Fe I	15	5425.621		Co I	196	5456.11		Si II	
5397.60		A II		5425.93		P II	6	5456.27		Cl II	2
5397.60		Fe I	841	5426.256		Ti I	3	5456.48		Fe I	817
5398.285		Fe I	1145	5427.832		Fe II		5457.02		Cl II	2
5398.82		Ti IV		5428.64		S II	6	5457.10		V II	53
5399.489		Mn I	42	5428.71	P	Fe I	1032	5457.47		Cl II	2
5400.509		Fe I	1145	5428.79		Ba II	9	5457.471		Mn I	4
5400.5620		Ne I	3	5428.85		Ni I	161	5458.68		La II	99
5400.608		Cr I	191	5429.139		Ti I	259	5460.502		Ti I	3
5400.67		S II	61	5429.43	P	Fe I	1029	5460.644		Mn I	31
5401.05		Mg II	24	5429.52	P	Fe I	1062	5460.742		Hg I	1
5401.27	P	Fe I	1146	5429.699		Fe I	15	5460.8		Fe III	68
5401.32		Ti I	35	5429.83	P	Fe I	1162	5460.909		Fe I	464
5401.945		V I	130,139	5430.14		Fe III		5461.31		Ta I	4
5402.000		Co I	195	5430.41	P	Cr II	29	5461.54		Fe I	1145
5402.113		Fe II		5431.526		Nd II	80	5461.80	P	Fe I	817
5402.27		Fe III		5432	P	O V	13	5462.487		Ni I	192
5402.51		Ta I	1	5432.09		V II	53	5462.62		N II	29
5402.57		Lu I	2	5432.318		Ti I	265	5462.970		Fe I	1163
5402.69		A II		5432.347		Cr I	204	5463.282		Fe I	1163
5402.78		Y II	35	5432.548		Mn I	1	5463.38		Hf II	14
5403.823		Fe I	1029	5432.77		S II	6	5463.974		Cr I	204
5404.023		Ti I	259	5432.950		Fe I	1113	5464.286		Fe I	1030
5404.12	P	Fe I	1145	5432.98	P	Fe II	55	5464.36	P	Cr II	35
5404.144		Fe I	1165	5434.527		Fe I	15	5464.37		La II	49
5404.87		O I	53	5435.16		O I	11	5465.04	P	Fe I	840
5404.95		Ta I	13	5435.17	P	Fe I	1161	5466.021		Fe II	
5405.004		Cr I	191	5435.27		Ta I	9	5466.404		Fe I	1144
5405.35	P	Fe I	1162	5435.76		O I	11	5466.46		Fe III	

I A	Type	Element	Multiplet No.
5466.46		Y I	12
5466.55		S II	11
5466.94		Fe II	
5466.993		Fe I	784,817
5467.76	P	Fe I	741
5468.101		Ni I	192
5468.37	P	Ce II	24
5468.44	P	Ti II	102
5468.92		Si II	
5469.09	P	Fe I	1131
5469.29	P	Fe I	1143
5469.305		Co I	56
5469.72		Gd II	60
5470.17		Fe I	1144
5470.460		Co I	175
5470.50		Ti I	108
5470.53		Gd II	63
5470.638		Mn I	4
5470.81	P	Fe II	52
5471.198		Ti I	106
5472.297		Ce II	24
5472.63		Cr II	50
5472.696		Ti I	107
5472.720		Fe I	1108
5473	P	O V	13
5473.18	P	Fe I	1064
5473.40		Y II	27
5473.517		Ti I	259
5473.517		Ti II	109
5473.59		S II	6
5473.908		Fe I	1062
5474.09	P	Fe I	1314
5474.228		Ti I	108
5474.449		Ti I	259
5474.734		Nd II	82
5475.57		Ni I	159
5476.298		Fe I	1029
5476.571		Fe I	1062
5476.69		Lu II	2
5476.906		Ni I	59
5477.089		Co I	175
5477.45	P	Cr II	50
5477.67	P	Fe II	49
5477.695		Ti I	265
5477.82		Zr II	115
5478.13		N II	29
5478.35		Cr II	50
5478.48		Fe I	1062
5478.6		C II	34
5479.95	P	Fe I	1282
5480.10		N II	29
5480.30		Ba II	9
5480.502		Cr I	204
5480.72		La II	90
5480.75		Y II	27
5480.865		Sr I	9
5480.872		Fe I	1062
5480.893		Ni I	191
5481.252		Fe I	1058
5481.396		Mn I	4,31
5481.426		Ti I	265
5481.451		Fe I	1061
5481.862		Ti I	106
5481.989		Sc I	16
5482.26	P	Fe I	873
5482.27		La II	4
5482.471		V I	2
5483.111		Fe I	1061
5483.354		Co I	39
5483.55		Li II	1
5483.56		P II	23
5483.962		Co I	175
5484.618		Sc I	16
5485.6		Fe III	68
5485.65		Li II	1
5485.699		Nd II	79
5486.136		Sr I	9
5486.6		O I	63
5486.86		La II	68
5487.00		V II	53
5487.16		Fe I	1143
5487.49	P	Fe I	870
5487.52	P	Fe I	1064
5487.747		Fe I	1025
5487.915		V I	129
5488.14	P	Fe I	1183
5488.210		Ti I	265
5488.97	P	Cr II	35
5489.85	P	Fe I	1148
5490.151		Ti I	107
5490.65	P	Ti II	68
5490.840		Ti I	3
5491.84		Fe I	1031
5492.43		Ti IV	
5492.8		O I	62
5492.82	P	Ti II	68
5493.22		Hf II	113
5493.33	P	Fe I	873
5493.45		La II	4
5493.508		Fe I	1061
5493.850		Fe I	464,1062
5494.35	P	V II	53
5494.468		Fe I	1024
5494.726		Ti I	108
5494.890		Ni I	231
5495.682		Co I	166
5495.70		N II	29
5495.8720		A I	14
5496.020		V I	2
5496.24		Si II	
5496.57	P	Fe I	1281
5497.42		Y II	27
5497.519		Fe I	15
5497.70	P	Fe II	204
5497.86	P	Cr II	22
5497.92	P	Ti I	51
5498.18		S I	12
5498.19	P	Fe II	24
5499.39	P	Ni I	176
5499.60	P	Fe I	1159
5499.72		P II	6
5500.43		Gd II	99
5500.61	P	Cr II	35
5501.34		La I	3
5501.469		Fe I	15
5501.54		S I	12
5502.05		Cr II	50
5502.88		Al II	78
5503.18		Cr II	50
5503.397		Fe II	
5503.897		Ti I	287
5504.120		Ni I	175
5504.184		Sr I	9
5504.21		Mn I	31
5505.75	P	Fe I	1162
5505.869		Mn I	4
5505.893		Fe I	1145
5506.268		Fe II	
5506.51		Mo I	4
5506.782		Fe I	15
5507.01		S I	12
5507.15		P II	23
5507.753		V I	129
5508.11		O III	16
5508.60		Cr II	50
5508.88	P	Cr I	224
5509.67		S II	6
5509.91		Y II	19
5510.001		Ni I	190
5510.174		Mn I	31
5510.23	P	Fe I	1023
5510.58		Gd II	132
5510.68		Cr II	23
5511.795		Ti I	108,275
5512.085		Ce II	24
5512.277		Fe I	1143
5512.40	P	Fe I	1148
5512.529		Ti I	106
5512.69		Cr I	121
5512.71		O I	25
5512.979		Ca I	48
5513.86	P	Fe I	925
5514.215		Sc I	15
5514.350		Ti I	106
5514.536		Ti I	106
5514.712		W I	1
5514.80		Ni I	189
5515.083		V I	2
5515.371		V I	1
5515.990		Co I	195
5516.09		Sm I	2
5516.29	P	Fe I	1057
5516.771		Mn I	4
5517.08		Fe I	1109
5518.11	P	Ti I	265
5518.491		Ce II	26
5518.57	P	Fe I	1314
5518.74		S II	61
5519.047		Ba I	9
5519.72	P	Fe II	204
5519.83	P	Fe II	52
5520.19	P	Fe I	1144
5520.496		Sc I	15
5521.14	P	Fe I	839
5521.28	P	Fe I	1162
5521.44		Ni I	175
5521.56	P	Y II	27
5521.765		Sr I	9
5522.46		Fe I	1108
5523.310		Co I	112
5524.25	P	Fe I	1059
5524.35		Hf II	25
5524.990		Co I	192
5525.14	P	Fe II	56
5525.48	P	Fe I	1107
5525.552		Fe I	1062
5525.90	P	Cr II	22
5526.06		Sc I	18
5526.22		S II	11
5526.26		N II	63
5526.809		Sc II	31
5527.07	P	Fe I	464
5527.54		Y I	12
5527.606		Ti I	265
5527.72		V I	1
5528.3876		Mg I	9
5528.3986		Mg I	9
5528.4094		Mg I	9
5528.89	P	Fe I	1161
5529.15		Fe I	872
5529.80	P	Fe I	344
5529.94	P	Ti II	68
5529.940		Fe II	224
5530.10		V II	247
5530.27		N II	63
5530.780		Co I	38
5531.949		Fe I	1281
5532.13	P	Fe I	344
5532.17		La II	106
5532.65		Fe III	56
5532.752		Fe I	783
5533.01		Mo I	4
5534.68		Fe I	871,1063
5534.794		Sr I	9
5534.860		Fe II	55
5535.382		V I	1
5535.39		N II	63
5535.419		Fe I	626,1029
5535.484		Ba I	2
5535.66		La II	71
5536.0		C II	10
5536.01		K II	6
5536.59	P	Fe I	345
5536.77		S II	11
5537.11		Ni I	188
5537.756		Mn I	4
5538.32		Gd II	
5538.54		Fe I	839,1064
5539.28		Fe I	871
5539.831		Fe I	1130
5540.051		Sr I	9
5540.16		N II	63
5540.74		Si II	9
5541.030		Sc I	18
5541.19		P II	23
5541.58	P	Fe I	627
5543.03	P	Fe I	1064
5543.04	P	Fe I	926
5543.184		Fe I	926
5543.49		N II	63
5543.86	P	Cr II	35
5543.930		Fe I	1062
5544.61		Y II	27
5544.76	P	Fe II	166
5544.865		V I	38
5545.01		Gd II	98
5545.11		N I	26
5545.26	P	Fe II	24
5545.933		V I	38
5545.937		Co I	191
5546.02		Y II	27
5546.512		Fe I	1145
5547.00		Fe I	1061
5547.080		V I	38
5548.474		Nd II	73
5549.55	P	Fe I	1159
5549.66	P	Fe I	1314
5549.68		Sc I	15
5549.94		Fe I	926
5550.60		Hf I	1

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5551.29	P	Fe I	714	5587.865		Ni I	70	5624.605		V I	37
5551.77	P	Fe I	1059	5587.9		Fe III		5624.895		V I	37
5551.95		N II	63	5588.07	P	Fe I	1109	5625.326		Ni I	221
5551.985		Mn I		5588.25		P II	27	5625.43		N I	24
5552.12		Hf I	7	5588.757		Ca I	21	5625.74		A II	121
5552.25		Sc II	25	5589.00	P	Fe I	1160	5626.014		V I	37
5552.54		N II	63	5589.384		Ni I	205	5626.60	P	Cr II	22
5552.70	P	Fe I	1281	5590.120		Ca I	21	5627.08	P	Fe I	1084
5552.85	P	Fe I	344	5590.73		Hf II	48	5627.49	P	Fe II	57
5553.22	P	Fe I	1064	5590.744		Co I	90	5627.628		V I	37
5553.586		Fe I	1161	5591.322		Sc I	18	5628.347		Ni I	215
5553.693		Ni I	69	5591.38	P	Fe II	55	5628.645		Cr I	203
5553.81	P	Cr II	34	5592.146		Ni I	250	5630.14		Y I	12
5554.895		Fe I	1183	5592.283		Ni I	69	5631.404		Tm I	
5554.94		O I	24	5592.37		O III	5	5631.707		Sn I	4
5555.17	P	Fe I	740	5592.409		V I	37	5631.72		Fe I	1159
5556.01		S II	6	5592.962		V I	1	5632.25		Gd I	3
5556.19		Cr I	120,121	5593.23		Al II	16	5632.469		V I	1
5556.48		Yb I	1	5593.735		Ni I	206	5633.970		Fe I	1314
5557.08		Al I	6	5594.425		Nd II	79	5634.53	P	Fe I	1281
5557.453		V I	1	5594.468		Ca I	21	5634.84		Cl II	23
5557.90	P	Fe I	464,1164	5594.661		Fe I	1182	5635.85		Fe I	1088
5557.95		Al I	6	5595.06	P	Fe I	1314	5636.00	P	Fe I	1058
5557.954		Fe I	1163	5597.21		Gd II	95	5636.235		Ru I	10
5558.31		As II	2	5597.87		Cr I	239	5636.708		Fe I	868
5558.752		V I	77	5597.92		Ti I	229	5637.121		Ni I	218
5558.825		Co I	166	5598.303		Fe I	1183	5637.734		Co I	195
5559.06		S II	61	5598.47	P	Fe I	113	5638.266		Fe I	1087
5559.64	P	Fe I	282	5598.487		Ca I	21	5638.82		Ni I	203
5560.230		Fe I	1164	5600	P	O V	3	5639.492		Si II	9
5560.37		N I	25	5600.038		Ni I	219	5639.96		S II	14
5560.548		V I	1	5600.242		Fe I	866,1108	5640.32		S II	11
5560.69		Gd II	99	5601.285		Ca I	21	5640.46		Fe I	1202
5561	P	N IV	13	5602	P	O VI	11	5640.50		C II	15
5561.670		V I	77	5602.54	P	Fe I	1281	5640.971		Sc II	29
5562.02		V II	247	5602.788		Fe I	1062	5641.112		Ni I	230
5562.12	P	Fe I	1162	5602.846		Ca I	21	5641.464		Fe I	1087
5562.712		Fe I	626,1163	5602.955		Fe I	686	5641.880		Ni I	234
5562.768		Ne I	19	5603.651		Nd I	45	5642.01		V II	238
5563.604		Fe I	1062	5604.205		V I	85	5642.362		Cr I	239
5563.69	P	Fe I	112,1023	5604.943		V I	37	5642.660		Ni I	203
5564.37		N I	25	5605.91	P	Fe II	51	5642.75	P	Fe I	1184
5564.861		Sc I	18	5606	P	O V	3	5643.099		Ni I	259
5564.94		S II	6	5606.11		S II	11	5643.24		Gd I	3
5565.30		N II	63	5607.05		Ni I	205	5643.94	P	Fe I	1021
5565.476		Ti I	229	5607.12	P	Fe II	24	5644.137		Ti I	240
5565.56		Hf II	100	5607.66	P	Fe I	1058	5644.35	P	Fe I	1057
5565.708		Fe I	1183	5608	P	O V	3	5644.84		Gd II	60
5566.06	P	Cr II	35	5608.98	P	Fe I	1108	5645.62		S II	6
5566.82	P	Fe I	625	5609.19		Cr I	223	5645.665		Si I	10
5566.92		La II	90	5609.97	P	Fe I	866	5646.112		V I	37
5567.401		Fe I	209	5610.01	P	Cr II	34	5646.70	P	Fe I	1109
5567.815		Fe II		5610.257		Ce II	26	5646.98		S II	14
5568.07	P	Fe I	1059	5610.36		Y II	19	5647.234		Co I	112
5568.44	P	Fe I	1058	5610.53		La II	106	5648.08		C II	15
5568.71	P	Fe I	1026	5611.35	P	Fe I	869	5648.18		Cr I	239
5568.81		Cl I	80	5613.19		Al II	77	5648.570		Ti I	269
5568.81		Fe I	869	5613.698		Ce II	32	5648.90	P	Fe I	625
5569.625		Fe I	686	5613.70	P	Fe I	1282	5649.371		Cr I	239
5570.06	P	Fe I	345	5614.29	P	Fe I	1314	5649.66		Fe I	838
5570.46		Mo I	4	5614.303		Nd II	87	5649.697		Ni I	231
5571	P	N IV	13	5614.58	P	Fe I	739	5650.01		Fe I	1314
5572.849		Fe I	686	5614.790		Ni I	250	5650.31	P	Fe I	1180
5573	P	O V	3	5615.18	P	Fe I	1143	5650.7034		A I	12
5573.10		Fe I	1061	5615.308		Fe I	209	5650.71		Fe I	1314
5573.3		Fe III	68	5615.54	P	Cr I	239	5651.47	P	Fe I	1161
5574.41		Cr I	120	5615.652		Fe I	686	5651.53		As II	2
5576.097		Fe I	686	5616.21		Gd II	61	5651.734		Co I	56
5576.61		Si II	9	5616.54		N I	24	5652.01	P	Fe I	1059
5577.03	P	Fe I	1314	5616.63		S II	11	5652.3		La II	103
5577.70		A II	134	5617.14	P	e I	1068	5652.32		Fe I	1108
5578.734		Ni I	47	5617.22		e I	626	5653.889		Fe I	1159
5578.85		S II	11	5617.91		Gd I	3	5655.179		Fe I	1314
5579.34	P	Fe I	1061	5618.646		Fe I	1107	5655.506		Fe I	1107,1314
5580.51		Cr I	223	5619.23	P	Fe I	923	5656.6585		Ne I	24
5581.87		Y I	12	5619.60		Fe I	1161	5656.895		V I	127
5581.971		Ca I	21	5620.04		Fe I	1026,1205	5657.449		V I	37
5582	P	O V	3	5620.16		Zr I	25	5657.870		Sc II	29
5583.33		P II	23	5620.527		Fe I	1061	5657.92	P	Fe II	57
5583.68		Gd II	59					5658.334		Sc II	29
5583.97	P	Fe I	1059	5620.62	P	Nd II	86	5658.542		Fe I	686
5584	P	O V	3	5620.63		Cr II	189	5658.67	P	Fe I	1087
5584.490		V I	37	5621.43		Gd II	132	5658.826		Fe I	686
5584.738		V I	85	5622.075		V I	85	5659.104		Ti I	50
5584.768		Fe I	782	5622.23		Si I	11	5659.121		Co I	82
5586.007		V I	85	5623.20		N I	24	5659.86		Sm I	2
5586.16		Gd II	78	5623.64	P	Fe I	625	5659.95		S II	11
5586.763		Fe I	686	5624.056		Fe I	1160	5660.79		Fe I	869
5587.36	P	Fe I	583	5624.223		V I	127	5661.03	P	Fe I	1234
5587.582		Fe I	1026	5624.549		Fe I	686	5661.26		Fe I	1108

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5661.97	P	Fe I	1109	5701.138		Si I	10	5731.771		Fe I	1087
5662.154		Ti I	249	5701.35		Gd I	3	5732.29	P	Fe I	1313
5662.51		C II	15	5701.375		Si II		5732.72	P	Fe II	57
5662.525		Fe I	1087	5701.46	P	Cr II	22	5732.86	P	Fe I	1055
5662.58	P	Cr II	34	5701.553		Fe I	209	5733.86		Gd II	94
5662.891		Ti I	269	5702.244		Nd II	78	5734	P	N IV	9
5662.94		Fe I	924	5702.307		Cr I	203	5734.004		V I	135
5662.95		Y II	38	5702.434		Fe I	866	5735.70		Zr I	4
5664.017		Ni I	272	5702.666		Ti I	249	5735.74		Ca I	54
5664.040		Cr I	203	5703.09	P	Fe I	1053	5736.55		Lu I	1
5664.55		Zr I	47	5703.32		La II	48	5736.632		Cr I	228
5664.73		S II	11	5703.562		V I	35	5737.040		V I	35
5665.601		Si I	10	5705.32	P	Fe I	1058	5737.68	P	Fe II	58
5666.64		N II	3	5705.48		Fe I	1087	5737.71		Fe I	1053
5666.78	P	Ni I	233	5705.988		Fe I	1183	5738.22	P	Fe I	1084
5666.837		Fe I	1053,1060	5706.11	P	Fe I	1088	5738.286		Mn I	
5667.164		Sc II	29	5706.11		S I	11	5738.554		Cr I	227
5667.67	P	Fe I	209	5706.206		Nd II	86	5739.08	P	Ti I	249
5668.369		V I	37	5706.375		Si II		5739.30		Sc I	12
5668.868		Nd II	84	5706.973		V I	35	5739.464		Ti I	228
5668.901		Ce II	23	5707.03		Ca I	54	5739.762		Si III	4
5669.030		Sc II	29	5707.068		Fe I	868	5739.78	P	Fe I	1057
5669.590		Si II		5707.25	P	Fe I	866	5739.975		Ti I	228
5669.8	P Forb	Na I	7	5707.70	P	Fe I	1056	5740.65		La I	8
5669.945		Ni I	250	5708.109		Fe I	1161	5740.862		Nd II	86
5670.827		V I	36	5708.199		Ti I	249	5741.192		Ti I	280
5671.54		La II	95	5708.280		Nd II	79	5741.36		Sc I	12
5671.62	P	Cr II	22	5708.437		Si I	10	5741.861		Fe I	1086
5671.805		Sc I	12	5708.600		Sc I	12	5742.95	P	Fe I	1084
5672.28	P	Fe I	1234	5709.378		Fe I	686	5743.28		Ca I	
5673.58		Hf II	112	5709.559		Ni I	46	5743.438		V I	35
5675.08	P	Fe I	583	5709.93	P	Fe I	1088	5746.32	P	Cr I	228
5675.3	P Forb	Na I	7	5709.976		Tm II		5746.432		Cr I	243
5675.413		Ti I	249	5710.76		N II	3	5746.81		Ca I	54
5675.853		Tm I		5711.0735		Mg I	8	5747.29		N II	9
5676.02		N II	3	5711.0831		Mg I	8	5747.36		N I	35
5677.68	P	Fe I	1057	5711.0912		Mg I	8	5747.85	P	Fe I	343
5678.04	P	Fe I	1290	5711.754		Sc I	12	5747.88	P	Fe II	164
5678.38	P	Fe I	982	5711.852		Ti I	249	5747.95		Fe I	1182
5678.42		Cr II	189	5711.867		Fe I	1087	5748.15	P	Fe I	1290
5678.60	P	Fe I	113	5711.905		Ni I	69	5748.299		Ne I	13
5679.023		Fe I	1183	5712.150		Fe I	686	5748.343		Ni I	45
5679.56		N II	3	5712.39		La II	20	5748.412		V I	127
5679.908		Ti I	269	5712.635		Cr I		5748.860		V I	92
5680.26		Fe I	1026	5712.778		Cr I	119	5749.28		Ni I	176
5680.93		Zr I	25	5713.895		Ti I	249	5749.41		Gd II	97
5681.198		Cr I		5714.88	P	Fe I	552	5749.65	P	Fe I	1160
5682.204		Ni I	232	5715.086		Ni I	231	5750.424		O I	40
5682.483		Cr I	239	5715.107		Fe I	1061,1086	5751.41		Mo I	5
5682.633		Na I	6	5715.123		Ti I	228	5752.043		Fe I	1180
5682.88		Ca I		5715.47	P	Fe I	1054	5752.64		N I	33
5684.190		Sc II	29	5715.80	P	Fe I	1198	5752.711		V I	92
5684.523		Si I	11	5716.450		Ti I	249	5752.89		Ti I	214
5685.86	P	Fe I	1281	5717.30		Sc I	12	5753.136		Fe I	1107
5686.21		N II	3	5717.845		Fe I	1107	5753.38	P	Fe I	1084
5686.532		Fe I	1182	5717.99		Ca I	54	5753.692		Cr I	
5686.826		Sc I	12	5718.120		Nd II	86	5753.97	P	Fe I	170
5688.193		Na I	6	5719.18		Hf I	6	5754.17		Gd II	
5688.205		Na I	6	5719.2254		Ne I	28	5754.258		Si I	10
5688.47		Ca I		5719.821		Cr I	119	5754.41		Fe I	866
5688.525		Nd II	79	5720.445		Ti I	249	5754.675		Ni I	68
5688.593		Co I	90	5720.613		O I	40	5754.89	P	Fe I	113
5688.856		Si II		5720.79	P	Fe I	1291	5756.45	P	Ti I	228
5689.22		Mo I	5	5720.89	P	Fe I	1178	5757.69		Ca I	54
5689.465		Ti I	249	5721.02	P	Cr II	34	5759.270		Fe I	1184
5690.07	P	Fe I	1281	5721.70	P	Fe I	1057	5759.56	P	Fe I	1087
5690.470		Si I	10	5721.71	P	Fe I	1088	5759.57	P	Fe I	1204
5691.38	P	Fe II	47	5721.99		Gd II	110	5760.351		Fe I	867
5691.509		Fe I	1087	5722.56	P	Fe II	58	5760.53	P	Fe I	1054
5691.52		Ni I	228	5722.65		Al III	2	5760.71	P	Fe I	1056
5691.69	P	Fe I	1084	5723.66	P	Fe I	1160	5760.847		Ni I	231
5691.71		A II	134	5723.87	P	Ti II	79	5761.08	P	Fe I	1057
5691.99	P	Ti II	79	5724.073		Sc I	12	5761.27		Fe I	867
5694.46		He II	8	5724.37		A II	12	5761.411		V I	35
5694.730		Cr I	239	5724.445		Fe I	1109	5761.88		Ca I	54
5694.998		Ni I	220	5725.633		V I	135	5762.295		Ti I	309
5696.0		C III	2	5725.95	P	Fe II	57	5762.434		Fe I	866
5696.10	P	Fe I	1179	5727.024		V I	35	5762.84	P	Fe I	1086
5696.11	P	Fe II	18	5727.29		La II	48	5762.992		Fe I	1107
5696.22		Gd I	3	5727.662		V I	35	5764.300		Tm I	
5696.47		Al III	2	5727.69		P II	27	5764.32		Ca I	
5696.63		S I	11	5727.75		Fe I	1204	5764.419		Ne I	13
5698.05		Fe I	867	5728.32		Gd II	60	5766.330		Ti I	309
5698.330		Cr I	239	5728.74	P	Fe II	51	5767.18		Hf II	22
5698.37		Fe I	1130	5728.91		Y II	34	5767.43		N II	9
5698.509		V I	35	5729.203		Cr I	257	5768.895		Ce II	32
5700.14		Sc I	12	5730.67		N II	3	5769.06		La II	70
5700.24		S I	11	5731.103		O I	40	5769.31	P	Fe I	1179
5700.240		Cu I	2	5731.257		V I	36	5769.32		La I	8
5700.514		Cr I	203,228	5731.70		Ca I	54	5769.598		Hg I	5

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5770.17	P	Fe I	1236a	5801.71		Hf II	59	5840.47		Gd II	112
5772.258		Si I	17	5804.020		Nd II	79	5841.01		N I	32
5772.402		V I	92	5804.06		Fe I	959	5841.86		Cr II	198
5772.676		Cr I	227	5804.265		Ti I	309	5842.23		Hf II	50
5773.75	P	Fe II	165	5804.4488		Ne I	19	5842.391		Nd II	86
5774.037		Ti I	309	5804.478		Fe I	1087	5843.24		Cr I	119
5775.090		Fe I	1087	5804.91	P	Fe II	165	5843.77		C II	22
5776.670		V I	36	5805.233		Ni I	234	5843.80		A II	12
5776.76		Ta I	5	5805.76		C I	18	5844.606		Cr I	119
5777.622		Ba I	9	5805.76	P	Fe I	1313	5844.879		Fe I	1056
5777.77		Cr I	257	5805.77		La II	1	5845.27	P	Fe I	1313
5778.47		Fe I	209	5806.31	P	Cr II	34	5845.71		Gd II	112
5778.81	P	Fe I	1203	5806.56		La II	90	5846	P	N IV	15
5779.65	P	Fe II	24	5806.727		Fe I	1180	5846.12		Si II	8
5780.189		Mn I		5806.75		Si II	8	5846.306		V I	142
5780.452		Si I	9	5806.77	P	Sc II	21	5846.575		Co I	169
5780.621		Fe I	552	5807.05		Gd II	112	5847.010		Ni I	44
5780.77		Ni I	217	5807.14		V I	142	5848.09		Fe I	552,1175
5780.778		Ti I	214	5807.22	P	Fe I	581	5848.95		La II	111
5780.83		Fe I	552,922,1159	5807.79	P	Fe I	552	5849.67	P	Fe I	922
5780.97		Cr I	188	5807.97	P	Fe I	1178	5850.286		V I	92
5781.195		Cr I	119,188	5808.31		La II	4	5851.63		Gd I	3
5781.69		Y II	34	5808.63		La II	118	5852.19		Fe I	1178
5781.73	P	Ti II	79	5809.249		Fe I	982	5852.4878		Ne I	6
5781.806		Cr I	188	5809.50		Hf II	14	5853.18		Fe I	35
5782.132		Cu I	2	5809.75		Ti I	73	5853.48	P	Fe I	1340
5782.356		Tm II		5809.88	P	Fe I	1084	5853.62		Al II	41
5782.601		V I	35,127	5811.10		Ta I	3	5853.675		Ba II	2
5783.112		Cr I	188	5811.572		Nd II	78	5854.1		Fe III	
5783.15	P	Cr I	227	5811.93		Fe I	1022	5854.16		N I	32
5783.509		V I	141	5811.93	P	Fe II	24	5854.27		Cr I	
5783.934		Cr I	188	5812	P	N IV	15	5854.31	P	Sc II	21
5784.18		Ba II	13	5812.14		C IV	1	5855.126		Fe I	1179
5784.360		V I	141	5812.81		A II	125	5855.24		Gd II	112
5784.69		Fe I	686	5812.827		Ti I	309	5856.084		Fe I	1128
5785.0		Fe II	215	5813.33	P	Fe I	1054	5856.09		C II	22
5785.002		Cr I	188	5813.67		Fe II	163	5856.22		Gd I	3
5785.08		Mg I	24	5814.00		Ti I	73	5856.45	P	Fe II	183
5785.64		Si II		5814.62	P	Ti II	79	5856.96		Gd II	60
5785.67		Ti I	309	5814.80		Fe I	1086	5857.454		Ca I	47
5785.820		Cr I	188	5815.16		Fe I	1055	5857.755		Ni I	228
5785.86		Cr I	17	5815.23	P	Fe I	1234	5857.9	P	C III	20
5785.979		Ti I	309	5815.42	P	Fe I	1053	5858.27	P	Fe I	170
5786.153		V I	141	5815.85		Gd II	112	5858.28		Mo I	5
5786.99	P	Fe I	1084	5816.07	P	Fe I	1127	5858.77	P	Fe I	1084
5787.036		Cr I	119	5816.36		Fe I	1179	5859.20		Fe I	1084
5787.27	P	Fe I	625	5816.48		N I	32	5859.23	P	Si I	9
5787.99		Cr I	188	5816.844		Mn I		5859.608		Fe I	1181
5788.389		Cr I	119	5817.063		V I	92	5859.96	P	Fe I	1054
5788.549		V I	92	5817.532		V I	142	5860.73		Gd II	58
5789.22		La I	8	5817.87		C II	22	5860.92	P	Ti II	79
5790.50		Cl II	27	5818.74		Eu II	9	5861.11	P	Fe I	1084
5790.59	P	Cr I	17	5819.22		S II	14	5861.53		Al II	41
5790.659		Hg I	4	5819.93		V II	99	5862.357		Fe I	1180
5791.005		Cr I	188	5820.155		Ne I	19	5862.80		V II	91
5791.044		Fe I	552	5820.99		Gd II	112	5863.70		La II	62
5791.32		La I	8	5823.13		C II	22	5863.96		Cr I	185
5791.38		Gd I	3	5823.17		Fe II	164	5863.97		Ni I	253
5791.47		V II		5823.679		Ti I	239	5864.24	P	Fe I	1086
5791.53	P	Fe I	1234	5824.40	P	Fe II	58	5864.54	P	Fe II	24
5791.781		Cr I	243	5826.12	P	Fe II	182	5866.453		Ti I	72
5791.86		Mo I	5	5826.299		Co I	169	5867.01	P	Fe I	1203
5793.128		Si I	9	5826.61	P	Fe I	1084	5867.497		Si II	8
5793.16	P	Fe II	47	5827.1		C III	22	5867.572		Ca I	46
5793.51		C I	18	5827.24		Cr II	198	5867.81		Al II	41
5793.70	P	Fe I	1236a	5827.80		C II	22	5868.404		Si II	8
5793.932		Fe I	1086	5827.80		Si II	8	5870.65	P	Fe I	1235
5794	P	N IV	15	5827.89	P	Fe I	552	5871.04		Fe I	150
5795.87		Fe II	211	5828	P	N IV	15	5871.289		Fe I	1055
5796.078		Ni I	68	5829.12	P	Fe II	165	5871.6	P	C III	20
5796.67	P	Fe I	1054	5829.53		N I	32	5871.81		Gd II	79
5796.757		Cr I		5830.719		V I	142	5872.73	P	Fe I	552
5797.352		V I	142	5831.624		Ni I	233,250	5872.828		Ne I	31
5797.445		Ti I	309	5832.47		Ti I	309	5872.98		Eu II	9
5797.53	P	Cr I	185	5833.65		Fe III	114	5873.211		Fe I	1087
5797.57		La II	4	5833.93	P	Fe I	209	5874.00		La II	48
5797.76		Zr I	4	5834.06	P	Fe II	165	5875.6		Fe III	
5797.81	P	Fe II	165	5834.93	P	Fe II	57	5875.618		He I	11
5797.912		Si I	9	5835.10	P	Fe I	1084	5875.650		He I	11
5798.00	P	Cr I	185	5835.41	P	Fe I	1313	5875.989		He I	11
5798.194		Fe I	982	5835.43	P	Fe II	58	5876.27	P	Fe I	1084
5798.46		Cr I	17	5835.50	P	Fe II	182	5876.55		Cr I	119
5798.905		V I	142	5835.58	P	Fe I	343	5877.26		Gd II	94
5800.02	P	Fe II	165	5835.61		Fe II		5877.770		Fe I	1083
5800.229		Ba I	9	5836.31		C II	22	5879.49	P	Fe I	1201
5800.48		Si II	8	5837.29		Au I	2	5879.79		Zr I	4
5801.14		Cr I	243	5837.709		Fe I	1129	5880.00		Fe I	1201
5801.17		C I	18	5838.418		Fe I	959	5880.306		Ti I	71
5801.30		Gd II	112	5838.66		Cr I	119	5880.63		La II	35
5801.51		C IV	1	5839.78	P	Ti I	105	5881.28	P	Fe I	1178

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
5881.76	P	Fe I	63	5929.700		Fe I	1176	5978.970		Si II	4
5881.8950		Ne I	1	5930.173		Fe I	1180	5980.748		V I	49
5883.06	P	Fe I	1124	5930.61		La I	2	5980.89		Ti I	72
5883.421		Co I	90	5930.68		La I	2	5981.25		Ba II	13
5883.838		Fe I	982	5931.79		N II	28	5981.38	P	Fe I	837
5884.45:		Cr I	119	5931.89	P	Fe I	1017	5981.96		Cr I	185
5884.59		Gd II	112	5932.05	P	Fe II	47	5982.52		Ti I	264
5885.61		Zr I	2	5932.95		S II	13	5982.84		Cr I	185
5887.46	P	Fe I	1203	5933.80	P	Fe I	1198	5983.704		Fe I	175
5888.32		Mo I	5	5934.658		Fe I	982	5983.90		Lu II	2
5889.95:		Na I	1	5934.747		Nd II	78	5984.092		Co I	37
5889.97		C II	5	5935.23		Zr I	2	5984.253		Co I	201
5890.02	P	Sc II	21	5935.391		Co I	55	5984.586		Ti I	2
5890.48	P	Fe I	1313	5936.22		La II	19	5984.602		V I	49
5890.487		Co I	82	5937.806		Ti I	72	5984.805		Fe I	1260
5891.12		Fe I	581	5939.75		Ta I	7	5986.54	P	Fe II	24
5891.16	P	Fe I	1179	5940.25		N II	28	5987.057		Fe I	1260
5891.36		Fe II	211	5940.68		Ti I	2	5987.11		Gd II	97
5891.528		Nd II	86	5940.69		S II	21	5988.560		Ti I	154
5891.5		Fe III	114	5940.972		Fe I	1083	5990.59	P	Fe II	51
5891.65		C II	5	5941.36	P	Fe II	58	5991.34		O I	44
5891.89	P	Fe I	1236	5941.67		N II	28	5991.383		Fe II	46
5891.9		Fe II		5941.755		Ti I	72	5991.58	I	Fe I	1232
5892.46	P	Fe I	1201	5942.71	P	Fe I	1233	5991.890		Co I	90
5892.66		La II	48	5943.11	P	Fe I	1021	5991.93		O I	44
5892.71		Fe I	1086	5943.58	P	Fe I	63	5992.65	P	Fe I	1080
5892.76	P	Ni I	250	5943.62	P	Fe I	1085	5993.18		O I	44
5892.80	P	Fe I	63	5944.01		Ta I	8	5995.28		O I	44
5892.878		Ni I	68	5944.65	P	Ti I	2	5995.685		Ti I	311
5893.24	P	Fe I	1055	5944.8342		Ne I	1	5995.93	P	Fe I	1198
5893.42		Ge II	1	5946.484		Co I	169	5996.007		Ti I	154
5894.1	P	C III	20	5947.30	P	Fe I	1056	5996.16		S II	13
5894.351		Zn II	1	5947.50	P	Fe I	1199	5996.22	P	Fe I	624
5895.007		Fe I	1235	5948.30		La II	105	5996.49	P	Fe I	1083
5895.646		Tm I		5948.584		Si I	16	5996.74		Ni I	249
5895.89		S II	20	5949.35		Fe I	14,1176	5997.088		Ba I	7
5895.90		Cr II	198	5950.13	P	Fe I	1200	5997.24		Ta I	12
5895.923		Na I	1	5950.91		A II	12	5997.610		Ni I	252
5897.54		V II	98	5951.30		S II	21	5997.808		Fe I	1175
5897.62		Gd II	112	5951.45		V II	98	5998.86		Ni I	226
5898.212		Fe I	1259	5951.60		Gd II	95	5999.003		Ti I	198
5899.295		Ti I	72	5952.19	P	Fe I	1313	5999.30		Fe III	117
5901.0		Fe III	115	5952.39		N II	28	5999.47		N I	16
5901.53	P	Fe I	1083	5952.55	P	Fe II	182	5999.668		Ti I	227
5901.95		La II	107	5952.749		Fe I	959	5999.70		Al II	93
5902.182		Cr I	119	5953.162		Ti I	154	5999.83		Al II	93
5902.52		Fe I	1234	5953.65		Fe III	115	5999.85		Ba II	13
5903.317		Ti I	71	5955.12	P	Fe I	1233	6000.668		Co I	169
5903.6		Fe II		5955.37		Zr I	3	6001.18		Al II	109
5904.07		Gd II	112	5955.682		Fe I	1106	6001.53	P	Sc II	20
5905.673		Fe I	1181	5956.48		Gd II	59	6001.81		Al II	93
5906.50	P	Ti I	105	5956.5		Fe II		6002.273		V I	49
5907.36		C II	44	5956.702		Fe I	14	6002.601		V I	34
5908.24		Fe I	150	5957.612		Si II	4	6002.640		Ti I	198
5908.25		S II	13	5958.22	P	Fe I	1199	6003.033		Fe I	959
5909.38	P	Fe II	57	5958.23	P	Fe I	14	6004.53		Lu I	1
5909.99		Fe I	552	5958.34	P	Fe I	63	6004.57		Gd II	112
5911.45		Gd II		5958.46		O I	23	6005.030		Co I	37
5913.35	P	Fe I	781	5958.63		O I	23	6005.53		Fe I	207,1079
5913.55		Gd II		5959.878		Fe I	1020	6006.42		Al II	93
5913.730		Ti I	2	5960.93		N II	28	6007.313		Ni I	42
5913.87		Cr II		5961.91	P	Fe I	1080	6007.75	P	Fe I	581
5914.16		Fe I	1180,1181	5962.4		Fe II		6007.961		Fe I	1178
5914.28		V II	126	5963.25		Fe I	63	6008.295		Mn II	16
5914.92		C II	44	5965.040		Co I	169	6008.35	P	Fe I	1079
5915.123		Ti I	228	5965.474		Ne I	39	6008.48		N I	16
5915.266		Si II	8	5965.828		Ti I	154	6008.577		Fe I	982
5915.551		Co I	82	5966.07		Eu II	9	6008.648		V I	49
5915.93		Cr I	185	5967.77		V II	126	6009.298		Mn II	16
5916.250		Fe I	170	5969.38		Hf II	66	6009.45	P	Fe I	64
5916.364		V II	126	5969.554		Fe I	1086	6009.83	P	Fe I	624
5916.73		Cr I	185	5969.64		K II	7	6009.962		Mn II	16
5918.548		Ti I	71	5971.07		Ti I	264	6011.12		Gd II	60
5918.93	P	Fe I	1083	5971.09		La II	69	6012.21	P	Fe I	64
5919.60		C II	44	5971.28		Tm I		6012.251		Ni I	
5920.0		Fe III	115	5971.699		Ba I	7	6012.53		Ti I	264
5920.520		Fe I	581	5971.94		Al II	100	6012.75	P	Fe I	1198
5922.112		Ti I	72	5973.37	P	Fe I	1175	6013.498		Mn I	27
5922.365		Co I	55	5973.52		La II	103	6015.25	P	Fe I	63
5923.930		Ni I	259	5973.66		Ni I	226	6016.637		Mn I	27
5925.81	P	Ni I	42	5974.62	P	Fe I	1055	6016.66		Fe I	738
5926.83	P	Fe I	1231	5974.628		Ne I	28	6016.95	P	Fe I	1232
5927.15		S II	21	5975.355		Fe I	1017,1260	6017.52	P	Ti I	237
5927.71		La II	111	5975.5340		Ne I	1	6017.90		V I	49
5927.798		Fe I	1175	5975.830		Ce II	30	6018.34	P	Fe I	176
5927.82		N II	28	5976.18	P	Fe I	1125	6018.423		Ti I	198
5928.50	P	Fe I	1055	5976.799		Fe I	959	6018.62		Ti I	70
5928.86		V II	98	5978.17	P	Fe I	1199	6019.36	P	Fe I	780
5929.35		Hf II	69	5978.543		Ti I	154	6019.470		Ba I	7
5929.5		Fe III	114	5978.90		Fe III	117	6020.173		Fe I	1178

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
6021.09		Ge II	1	6080.65		Gd II	112	6120.98		V II	97
6021.18	P	Fe II	24	6080.85		S II	20	6121.008		Ti I	153
6021.802		Mn I	27	6081.421		V I	34	6122.219		Ca I	3
6021.82		Fe I	63,1079,1085	6081.51		Cr II	188	6122.438		Mn II	13
6022.81		As II	1	6081.72	P	Fe I	1142	6122.640		Co I	169
6023.41		Y I	3	6081.85	P	Fe I	1018	6122.799		Mn II	13
6024.066		Fe I	1178	6082.431		Co I	169	6123.164		Mn II	13
6024.15		P II	5	6082.718		Fe I	64	6123.38		A II	102
6025.723		Pr II	39	6083.67	P	Fe I	981	6123.41		S II	13
6025.73		Ni I	251	6083.82		V II	125	6124.08	P	Fe I	1326
6026.81		V II	125	6084.11		Fe II	46	6124.85		Si I	30
6027.057		Fe I	1018	6085.228		Ti I	69	6124.86		Zr I	24
6027.23		V II	90	6085.267		Fe I	269	6125	P	N IV	16
6027.57		Hf II	91	6085.43		La II	111	6125.03		Si I	30
6027.76	P	Fe I	1312	6086.290		Ni I	249	6125.855		Mn II	13
6028.26		V II	97	6086.55		V I	49	6126.09		La II	69
6028.64		Zr II	136	6086.663		Co I	165	6126.210		Mn II	13
6028.98		V II	125	6086.93		V II	125	6126.217		Ti I	69
6029.28		Cr I	242	6087.485		V I	33	6126.516		Mn II	13
6029.9971		Ne I	3	6087.76		P II	5	6127.49		Zr I	2
6030.66		Mo I	5	6089.473		V I	33	6127.913		Fe I	1017,1082
6031.07		V II	97	6089.566		Fe I	1327	6128.21		S II	28
6031.68		Ti I	2	6089.69		Cr II	187	6128.30		V I	33
6032.124		A I	13	6090.184		V I	34	6128.725		Mn II	13
6032.30		Fe III	117	6090.54	P	V I	33	6128.990		Ni I	42
6032.67		Fe I	1082	6091.175		Ti I	238	6129.022		Mn II	13
6034.01		P II	5	6091.74	P	Fe I	1200	6129.23		Cr II	105
6034.04	P	Fe I	1142	6092.13		S II	20	6129.255		Mn II	13
6034.204		Ce II	30	6092.814		Ti I	153	6129.57		La II	47
6035.34	P	Fe I	1125	6093.144		Co I	37	6129.71	P	Fe II	46
6035.487		Ce II	30	6093.66		Fe I	1177	6130.174		Ni I	248
6036.17		Sc I		6094.419		Fe I	1177	6130.37	P	Fe I	624
6036.7		He II	8	6094.65		Cl II	26	6130.794		Mn II	13
6039.312		Ni I	248	6095.37		C II	24	6131.005		Mn II	13
6039.690		V I	34	6095.93		V II	97	6131.30	P	Si I	30
6041.44		Hf II	65	6096.689		Fe I	959	6131.54		Si I	30
6041.93		S I	10	6097.08	P	Fe I	64	6131.86		Si I	30
6042.092		Fe I		6097.12		S II	13	6131.917		Mn II	13
6043.10		P II	5	6097.42		V I	33	6133.948		Ni I	229
6043.386		Ce II	30	6098.28	P	Fe I	1200	6134.58		Zr I	2
6043.738		Fe I	864	6098.62		C II	24	6135.07		V I	60
6044.53	P	Fe II	46	6098.655		Ti I	304	6135.10		Hf II	90
6045.38		Ta I	10	6100.04		Zr II	93	6135.36		V I	34
6045.497		Fe II	200	6100.23	P	Fe I	1199	6135.759		Cr I	314
6046.04		S I	10	6100.29	P	Fe I	1199	6135.83		Ba II	12
6046.26		O I	22	6100.37		La II	47	6136.620		Fe I	169
6046.46		O I	22	6102.178		Fe I	1259	6136.9		N II	36
6047.665		Cr I	242	6102.26		S II	26	6136.999		Fe I	62
6048.636		V I	49	6102.59		C II	24	6137.51	P	Fe I	685
6049.110		Co I	201	6102.59	P	Fe III	3	6137.696		Fe I	207
6049.50		Gd II	59	6102.722		Ca I	3	6138.38		Ti I	197
6049.51		Eu II	2	6103.190		Fe I	1260	6138.44		Y I	3
6050.446		Mn II	16	6103.54		Fe II	200	6138.67		A II	21,103
6051.00	P	Fe I	207	6103.56		A II	27	6138.77		Cr II	188
6051.860		Mn II	16	6103.642		Li I	4	6138.98		S II	63
6052.66		S I	10	6105.15	P	Fe I	1175	6139.65	P	Fe I	208
6052.892		Mn II	16	6105.381		Mn II	16	6140.50		Zr I	24
6053.48		Cr II	105	6106.19		Gd II	95	6141.01	P	Fe II	46
6053.680		Ni I	247	6106.25		O I	43	6141.718		Ba II	2
6054.100		Fe I	1142	6106.47		Zr II	106,137	6141.734		Fe I	816
6055.987		Fe I	1259	6106.84	P	Fe I	208	6142.047		Ni I	244
6058.113		V I	34	6106.967		V I	60	6142.21	P	Si I	30
6058.76	P	Ti I	70	6107.09	P	Fe I	1081	6142.53		Si I	30
6059.25	P	Sc I	20	6107.293		Mn II	16	6143.0623		Ne I	1
6060.81	P	Fe I	1081	6107.32	P	Fe I	1015	6143.23		Zr I	2
6061.04		Fe I	217	6108.121		Ni I	45	6145.06		Si I	29
6061.11		Al I	99	6108.8	P	Mn II	16	6145.42	P	Fe I	685
6062.75		Cr I	185	6109.318		Fe I	581	6145.225		Ti I	153
6062.88		Zr I	3	6110.30		As II	5	6146.38		Co I	80
6062.89		Fe I	63	6110.784		Ba I	7	6146.53		La II	4
6063.117		Ba I	7	6111.06		Ni I	230	6147.15		Cr II	105
6064.631		Ti I	69	6111.622		V I	34	6147.735		Fe II	74
6065.487		Fe I	207	6112.26		Cr II	105	6147.85		Fe I	1016
6065.5		N II	27	6113.33		Fe II	46	6148.65	P	Fe I	1141
6065.81	P	Fe I	581	6114.07		Gd I	3	6149.238		Fe II	74
6066.32		Al II	92	6114.41	P	Fe I	981	6149.743		Ti I	197
6066.44		Al II	92	6114.6		N II	36	6150.10	P	Fe II	46
6067.13		La II	48	6114.7(		Zr II	93	6150.132		V I	20
6067.62	P	Si I	15	6114.92		A II	102	6150.9		N II	36
6068.00		Cr II	197	6115.21		C II	19	6151.509		V I	33
6068.46		Al II	92	6116.04	P	Fe II	46	5151.624		Fe I	62
6069.69		Cr II	197	6116.181		Ni I	218,251	6152.82	P	Fe I	1312
6070.08		Cr II	105	6116.994		Co I	37	5154.225		Na I	5
6073.23		Al II	92	6118.06		Ni I	230	6154.4	P	C III	13
6074.1		He II	8	6118.2		He II	8	5155.22		Si I	29
6074.3377		Ne I	3	6119.505		V I	34	6155.24	P	Fe II	161
6077.43		A II	12	6119.780		Ni I	244	6155.4	P	C III	13
6078.496		Fe I	1259	6120.12		A II	22	6155.73		Si I	29
6079.02		Fe I	1176	6120.25	P	Fe I	14	6156.99		O I	10
6080.11		V II	206	6120.86		Zr I	24	6156.10		Ca I	20

I A	Type	Element	Multiplet No.
6156.25		Hf II	67
6156.6	P	C III	13
6156.78		O I	10
6157.41	P	Fe I	624
6157.734		Fe I	1015
6158.19		O I	10
6159.409		Fe I	1175
6160.747		Na I	5
6160.75	P	Fe II	161
6161.194		Pr II	39
6161.289		Ca I	20
6161.84		S II	27
6162.172		Ca I	3
6163.42		Ni I	230
6163.560		Fe I	64
6163.5939		Ne I	5
6163.758		Ca I	20
6165.18	P	Ni I	229
6165.366		Fe I	1018
6165.56		P II	5
6165.945		Pr II	39
6166.443		Ca I	20
6167.82		N II	36,60
6168.46		Cr II	196
6168.86		Co I	82
6169.055		Ca I	20
6169.559		Ca I	20
6170.16		N II	36
6170.340		V I	20
6170.47		As II	1
6170.492		Fe I	1260
6170.568		Ni I	228,230
6170.6		He II	8
6171.01	P	Fe I	1256
6172.28		A II	102
6172.72		La II	4
6173.05		Eu II	9
6173.343		Fe I	62
6173.40		N II	36
6174.15		La II	47
6175.158		Fe II	200
6175.424		Ni I	217
6176.813		Ni I	228
6176.95		Cr II	105
6177.258		Ni I	58
6177.49		Ni I	244
6178.13	P	Fe II	46
6179.17		Cr II	187
6179.378		Fe II	163
6180.093		Ni I	65,217
6180.216		Fe I	269
6180.42		Gd II	111
6181.57		Al II	66
6181.68		Al II	66
6182.28		Al II	66
6182.45		Al II	66
6183.42		Al II	66
6183.892		Ni I	226
6184.94	P	Fe II	163
6185.1		Fe III	
6185.34	P	Fe II	46
6186.14		Ti I	197
6186.740		Ni I	229
6187.41	P	Fe I	342
6188.00	P	Cr II	187
6188.037		Fe I	959
6188.09		La II	117
6189.005		Co I	37
6189.350		V I	20
6191.186		Ni I	45
6191.562		Fe I	169
6191.73		Y I	2
6192.96		Zr I	24
6193.672		Sc I	3
6195.18		Cr II	105
6196.71	P	Fe II	46
6199.16		Fe II	162
6199.202		V I	19
6199.475		Fe I	208
6200.323		Fe I	207
6201.52		Al II	57
6201.70		Al II	57
6202.31	P	Fe I	208
6203.51		La II	111
6204.640		Ni I	226
6207.251		V I	20
6208.18		Cr II	105
6209.73	P	Fe I	981
6210.676		Sc I	2
6212.04		Fe I	1142
6212.30		Ti II	108
6213.06		Zr I	24
6213.438		Fe I	62
6213.874		V I	20
6214.58		Zn II	1
6215.152		Fe I	1018
6215.212		Ti I	293
6216.368		V I	19
6217.2813		Ne I	1
6217.288		Fe I	1335
6217.95	P	Fe II	34
6219.290		Fe I	62
6219.35	P	Fe II	161
6219.54	P	Fe I	685
6219.54	P	Fe II	34
6220.460		Ti I	293
6220.78		Fe I	958
6221.40		Fe I	981
6221.41		Ti I	293
6221.661		Fe I	13
6221.88		Lu II	2
6222.59		Y I	2
6222.81		Hf II	57
6223.994		Ni I	228
6224.23	P	Fe I	1257
6224.26	P	V I	20
6224.507		V I	20
6226.18		Al II	10
6226.29		V II	124
6226.66		Cr II	105
6226.77		Fe I	981
6229.234		Fe I	342
6229.34	P	Fe II	34
6230.115		Ni I	227
6230.728		Fe I	207
6230.736		V I	19
6230.84		Hf II	69
6230.968		Co I	37
6231.76		Sc I	3
6231.78		Al II	10
6232.661		Fe I	816
6232.735		Fe I	685
6233.187		V I	20
6233.52		Fe II	
6233.8		He II	7
6237.34		Si I	28
6237.62		Si I	27
6238.375		Fe II	74
6239.36	P	Fe II	34
6239.410		Sc I	2
6239.64		F I	3
6239.73		A II	21
6239.77		Cr II	105
6239.778		Sc I	3
6239.95	P	Fe II	74
6240.137		V I	20
6240.266		Fe I	1015
6240.656		Fe I	64
6242.52		N II	57
6242.80		V I	19
6243.11		V I	19
6243.13		A II	21
6243.36		Al II	10
6243.86		Si I	28
6244.13	P	Si I	28
6244.344		Pr II	39
6244.51		Sc I	3
6244.56		Si I	27
6245.214		V I	20
6245.629		Sc II	28
6245.84		Fe I	1289
6246.334		Fe I	816
6247.562		Fe II	74
6248.916		Fe II	
6248.95		Hf II	22
6249.65	P	Fe I	685
6249.92		La I	7
6251.26	P	Fe I	1176
6251.83		V I	19
6252.561		Fe I	169
6253.82	P	Fe I	1256
6254.25		Si I	28
6254.262		Fe I	111
6254.96		Si I	28
6256.365		Ni I	43
6256.370		Fe I	169
6256.84		O I	50
6256.906		V I	19
6257.72		Ti I	1
6257.834		Nd II	72
6258.103		Ti I	104
6258.591		Ni I	226
6258.595		V I	19
6258.706		Ti I	104
6258.962		Sc I	3
6259.615		Ni I	216
6260.31		Gd II	111
6261.101		Ti I	104
6261.236		V I	20
6261.55		O I	50
6262.30		La II	33
6264.55		O I	49
6264.825		Ti I	144
6265.140		Fe I	62
6266.021		Ti I	144
6266.32		V I	20
6266.4950		Ne I	5
6266.89		O I	48
6267.64	P	Fe I	110
6267.845		Fe I	1123
6268.50		Ti I	103
6268.841		V I	20
6270.238		Fe I	342
6271.289		Fe I	685
6271.52	P	Fe I	1231
6271.83		Cr II	196
6272.650		Ni I	244
6273.389		Ti I	1
6273.76		La II	131
6274.34		S II	19
6274.670		V I	19
6274.94		Cr II	196
6276.310		Sc I	2
6277.525		Ti I	144
6278.30		Au I	1
6279.757		Sc II	28
6279.84		Hf II	13
6280.625		Fe I	13
6282.636		Co I	37
6282.92		Cr II	196
6284.00	P	Fe I	624
6284.30		N II	32
6285.185		V I	19
6286.35		S II	19
6287.06		S II	26
6290.55	P	Fe I	208
6290.968		Fe I	1258
6292.858		V I	19
6293.00	P	Ti I	103
6293.92	P	Fe I	1260
6295.251		Ti I	1,144
6295.949		Ti I	144
6296.08		La II	47,68
6296.518		V I	19
6296.646		Ti I	1
6297.800		Fe I	62
6298.075		Ti I	144
6299.07		Gd II	123
6299.74	P	Fe III	3
6300.363		Ni I	246
6300.697		Sc II	28
6301.515		Fe I	816
6301.86	P	Fe I	863
6302.507		Fe I	816
6303.41		Eu II	8
6303.46		Fe I	1140
6303.754		Ti I	104
6304.35		Zr I	24
6305.15		Gd II	94
6305.262		Pr II	39
6305.318		Fe II	200
6305.46		La II	5
6305.51		S II	19
6305.60		Cr II	
6305.671		Sc I	2
6306.047		Sc I	3
6306.17		Hf II	81
6306.19	P	Fe I	1230
6307.25		La II	117
6307.85	P	Fe I	863
6309.902		Sc II	28
6310.543		Fe I	405
6310.8		He II	7
6310.91		La II	103
6311.289		Ti I	103
6311.506		Fe I	342
6312.240		Ti I	104
6312.68		S II	26
6313.05		Zr I	65

I A	Type	Element	Multiplet No.
6313.57		Zr II	136
6314.22		Gd II	121
6314.29		S II	28
6314.666		Ni I	67
6314.67	P	Ni I	249
6315.316		Fe I	1015
6315.42	P	Fe I	1016
6315.79		La II	117
6315.814		Fe I	1014
6316.61		Ni I	248
6318.022		Fe I	168
6318.027		Ti I	103
6318.11		Ca I	53
6318.23		Mg I	23
6318.75		Mg I	23
6320.39		La II	19
6320.854		Sc II	28
6322.165		Ni I	249
6322.693		Fe I	207
6322.98	P	Fe III	3
6323.39		O I	31
6324.45		A II	
6324.84		O I	31
6325.22		Ti I	1
6325.90		La I	2
6326.43		S II	63
6326.845		V I	84
6327.603		Ni I	44
6328.6		N II	46
6329	P	O V	14
6330.101		Cr I	6
6330.856		Fe I	1254
6331.969		Fe II	199
6334.4279		Ne I	1
6335.335		Fe I	62
6335.74		Al II	22
6336.104		Ti I	103
6336.835		Fe I	816
6338.896		Fe I	1258
6339.090		V I	84
6339.148		Ni I	248
6339.96	P	Fe I	685
6340.67		N II	46
6341.682		Ba I	6
6342.682		Sc II	28
6343.29		Ca I	53
6343.963		Ce II	
6344.154		Fe I	169
6344.831		Sc I	1
6346.54		Zr II	128
6346.65		Gd II	96
6346.67		Mg II	16
6347.091		Si II	2
6347.1		N II	46
6347.843		Co I	200
6348.50		F I	3
6349.477		V I	84
6349.748		Mn I	39
6351.17		O I	61
6351.29	P	Fe I	1140
6351.448		Co I	200
6353.84	P	Fe I	13
6355.038		Fe I	342
6356.057		Mn I	39
6356.293		Fe I	208
6357.0		N II	46
6357.10	P	Zr I	2
6357.297		V I	84
6358.12		La II	47
6358.692		Fe I	13
6359.896		Ti I	1
6360.798		Ni I	229
6361.41		Ti I	196
6361.79		Ca I	53
6362.286		Sc I	1
6362.347		Zn I	6
6362.414		Ni I	
6362.874		Cr I	6
6362.889		Fe I	1019
6364.384		Fe I	1253
6364.597		Ni I	67
6364.717		Fe I	1229
6364.92		Ti I	1
6365.7		N II	2
6366.33		O I	60
6366.354		Ti I	103
6366.483		Ni I	230
6369.34		S II	19
6369.45		Fe II	40
6370.383		Ni I	127
6371.359		Si II	2
6374.08		La II	111
6374.31		O I	59
6375.96		Fe II	
6376.00		A II	61
6376.22	P	Fe I	1140
6378.263		Ni I	247
6378.824		Sc I	1
6378.91		Ba II	12
6379.63		N II	2
6380.11		V II	231
6380.748		Fe I	1015
6380.95		Gd II	111
6381.416		Ti I	196
6382.169		Mn I	39
6382.9914		Ne I	3
6383	P	N IV	2
6383.753		Fe II	
6384.669		Mn I	39
6384.697		Ni I	246
6384.89		S II	19
6385.196		Nd II	85
6385.473		Fe II	
6385.74	P	Fe I	1253
6386.48		S II	5
6386.75		Fe II	203
6388.41	P	Fe I	685
6390.48		La II	33
6391.214		Mn I	39
6392.534		Fe I	109
6393.605		Fe I	168
6394.23		La I	7
6395.158		Co I	174
6395.16		Ca I	
6395.27		S II	
6396.39	P	Fe I	921
6397.30		S II	19
6398.05		S II	19
6399.04		La II	104
6399.23		A II	21
6399.41		Cl II	58
6400.010		Fe I	816
6400.335		Fe I	13
6402.005		Y I	2
6402.2455		Ne I	1
6402.43	P	Fe I	1344
6403.58		S I	9
6405.89		Ca I	
6406.3		He II	7
6406.42		Fe I	1334
6407.03		Zr I	2
6407.30		Fe II	74
6408.031		Fe I	816
6408.13		S I	9
6408.463		Sr I	8
6410.98		La I	7
6411.10	P	Fe I	1256
6411.658		Fe I	816
6412.20	P	Fe I	169
6413.13	P	Ti I	1
6413.353		Sc I	1
6413.66		F I	3
6413.71		S II	19
6413.92		Mn I	39
6414.603		Ni I	244
6415.24		Si I	
6415.50		S I	9
6415.59		Cr II	196
6416.905		Fe II	74
6416.94	P	Fe I	1253
6417.824		Co I	111
6418.87		Cr II	196
6419.15		Ti I	196
6419.65	P	Fe I	958
6419.982		Fe I	1258
6420.47		N I	23
6421.355		Fe I	111
6421.507		Ni I	258
6424.905		Ni I	227
6428.80		Fe I	1138
6429.913		Co I	81
6430.471		V I	107
6430.78		Ta I	11
6430.851		Fe I	62
6431.620		V I	107
6432.06		Ni I	126
6432.654		Fe II	40
6433.17		V I	107
6433.85		Fe II	199
6434.44	P	Fe III	3
6435.02		Y I	2
6435.148		V I	107
6436.43		Fe I	1016
6437.01		N I	23
6437.63		A II	25
6437.64		Eu II	8
6438.4696		Cd I	3
6438.775		Fe I	1158
6439.073		Ca I	18
6440.974		Mn I	39
6441.70		N I	23
6441.95		A II	
6442.97		Fe II	
6443.05		La II	117
6443.492		Mn I	39
6445.05		N III	14
6445.76		Zr I	57
6446.281		Mn II	19
6446.43		Fe II	199
6446.62		La II	104
6448.10		Sc I	1
6449.810		Ca I	19
6450.09	P	Co I	80
6450.230		Co I	37
6450.78		N III	14
6450.854		Ba I	6
6450.99		Fe I	1344
6451.58		Fe I	921
6451.580		Ni I	257
6452.354		V I	48
6452.77		Ni I	226
6453.50		Sn II	1
6453.64		O I	9
6453.95		N III	14
6454.48		O I	9
6454.998		Co I	174
6455.600		Ca I	19
6455.85		Hf II	82
6455.99		La I	1
6456.01		O I	9
6456.376		Fe II	74
6456.87	P	Fe I	1256
6456.907		Ca II	19
6457.93		N I	22
6458.68	P	Fe III	3
6460.1		P II	32
6462.210		Mn II	20
6462.454		Mn II	20
6462.566		Ca I	18
6462.72	P	Fe I	13
6462.731		Fe I	168
6462.799		Mn II	20
6463.03		N III	14
6463.11		Lu II	2
6463.195		Mn II	20
6463.637		Mn II	20
6464.67	P	Fe I	13
6464.70		Ca I	19
6466.86		N III	14
6466.97		V I	32
6468.32		N I	22
6468.77		N III	14
6468.86	P	Fe I	1254
6469.12	P	Fe I	168
6469.214		Fe I	1258
6470.25		Zr I	65
6471.660		Ca I	18
6472.15	P	Fe I	1140
6472.34		Sm II	60
6473.89		Hf II	91
6474.558		Co I	165
6474.61		Fe I	861
6475.632		Fe I	206
6477.861		Co I	174
6478.69		N III	14
6480.11		Gd II	109
6481.73		N I	21
6481.878		Fe I	109
6482.07		N II	8
6482.205		Fe II	199
6482.74		N I	21
6482.811		Ni I	66
6483.10		A II	27
6483.75		N I	21
6483.95	P	Fe I	34
6484.88		N I	21
6485.36		Ta I	12
6487.43		Fe II	203
6487.48	P	Fe III	3
6487.55		N III	14

I A	Type	Element	Multiplet No.
6489.10		Yb I	3
6489.68		Zr I	65
6490.344		Co I	81
6491.28		Fe II	
6491.28		N I	21
6491.61	P	Ti II	91
6491.712		Mn I	39
6492.0		N II	45
6493.05		Fe II	
6493.780		Ca I	18
6494.11		Gd I	123
6494.52	P	Fe I	1255
6494.985		Fe I	168
6495.45		Al II	65
6495.779		Fe I	1253
6496.456		Fe I	1258
6496.896		Ba II	2
6497.689		Ti I	102
6498.19		La II	104
6498.759		Ba I	6
6498.950		Fe I	13
6499.52		N I	21
6499.649		Ca I	18
6500.25		A II	26
6501.212		Cr I	16
6501.681		Fe I	
6503.989		Sr I	8
6504.164		V I	48
6504.9		N II	45
6506.33		Fe II	
6506.45		N I	21
6506.5279		Ne I	3
6508.135		Ti I	102
6508.742		Ca I	18
6509.16		A II	21
6509.56		Fe I	1012
6511.62		Hf II	69
6512.61		Hf II	49
6516.026		Cr I	265
6516.053		Fe II	40
6517.01		Fe II	
6517.27		V II	230
6518.376		Fe I	342
6519.371		Mn I	39
6521.39		S II	25
6522.3		N II	45
6522.38		Cl II	59
6524.76	P	Fe I	1280
6526.99		La II	33
6527.20	P	Si I	52
6527.312		Ba I	6
6527.49		Si I	62
6528.53		Fe I	
6529.197		Cr I	265
6531.44		V I	48
6531.66		Hf II	48
6532.891		Ni I	64
6533.0		N II	45
6533.97		Fe I	1197
6537.921		Cr I	16
6539.72		Fe I	405
6541.49	P	Fe I	1195
6542.80		Hf II	100
6543.17		La I	7
6543.51		V I	48
6543.98		Fe I	1139
6545.2		N II	45
6545.80		Mg II	23
6546.245		Fe I	268
6546.276		Ti I	102
6546.791		Sr I	8
6547.58	P	Fe I	13
6548.72		Hf II	
6550.01		Hf II	111
6550.244		Sr I	12
6551.466		Co I	54
6551.68	P	Fe I	13
6552.77		Fe I	1325
6554.18		La II	109
6554.226		Ti I	102
6555.20		Si I	62
6555.87	P	Fe I	1007
6556.066		Ti I	102
6556.79		Fe I	1255
6557.40		Y I	1
6557.87		Sc I	24
6557.91		Hf II	66
6558.02		V I	59
6558.05		Sc I	24
6559.580		Ti II	91
6560.099		He I	2
6560.68		Si I	62
6561.032		D	1
6562.817		H	1
6563.403		Co I	80
6563.86		Hf II	81
6565.62		Ti I	
6565.88		V I	48
6567.22	P	Fe I	168
6567.39		Hf II	90
6568.00		Gd II	121
6569.261		Fe I	1253
6569.31		Sm II	62
6570.0		He II	7
6570.834		Mn I	51
6570.96		La II	47
6571.22		Fe I	1121
6572.781		Ca I	1
6572.900		Cr I	16
6574.238		Fe I	13
6575.022		Fe I	206
6575.180		Ti I	286
6576.95	P	Ni I	283
6578.03		C II	2
6578.51		La I	1
6578.96		V I	32
6580.22		Ni I	265
6580.96		Cr I	16
6581.22		Fe I	34
6582.85		C II	2
6584.53		Hf II	99
6584.89		Y I	1
6586.328		Ni I	4
6586.343		Mn I	51
6586.69		Fe II	
6587.75		C I	22
6588.91		Sm I	1
6591.32		Fe I	1229
6591.834		Co I	202
6592	P	C IV	10
6592.472		Ni I	248
6592.91	P	Ti I	102
6592.919		Fe I	268
6593.878		Fe I	168
6595.326		Ba I	6
6595.869		Co I	174
6597.556		Cr I	282
6597.607		Fe I	1253
6598.594		Ni I	249
6598.9529		Ne I	6
6599.112		Ti I	19
6601.13	P	Fe I	1280
6603.20	P	Fe I	862
6603.67	P	Fe I	860
6604.60		Sc II	19
6604.67		Fe I	1254
6605.546		Mn I	51
6605.98		V I	48
6607.02	P	Ti II	91
6607.82		V I	99
6608.03		Fe I	109
6609.116		Fe I	206
6609.20		Hf II	105
6609.56		Fe I	
6609.64		Al II	76
6609.68	P	Fe I	13
6610.04		Gd II	108
6610.58		N II	31
6612.17		Cr I	282
6613.74		Y II	26
6613.83	P	Fe I	13
6615.03	P	Fe I	1155
6617.126		Co I	202
6617.14	P	Ni I	248
6617.266		Sr I	8
6621.24		Ni I	97
6622.28		Gd II	110
6622.41	P	Fe I	1157
6622.53		N I	20
6623.78	P	Fe I	1010
6624.86		V I	48
6625.04		Fe I	13
6627.28		Fe II	210
6627.558		Fe I	1174
6627.62		O II	85
6630.015		Cr I	16
6630.5		N II	41
6632.438		Co I	111
6633.44		Fe I	1258
6633.764		Fe I	1197
6634.10	P	Fe I	1258
6634.36		Gd II	94
6635.15		Ni I	264
6635.68	P	Fe I	1155
6636.53		La II	61
6637.01		N I	20
6638.24		A II	20
6639.35	P	Fe I	1279
6639.71	P	Fe I	1195
6639.72		A II	20
6639.90	P	Fe I	1007
6640.90		O II	4
6641.06		S II	25
6642.79		La II	103
6643.023		Cr I	256
6643.536		Sr I	8
6643.641		Ni I	43
6643.79		A II	20
6644.60		Hf II	34
6644.96		N I	20
6645.11		Eu II	8
6646.52		N I	20
6646.90	P	Fe I	1156
6646.98		Fe I	206
6647.06		Hf II	65
6647.90	P	Fe I	551
6648.08	P	Fe I	13
6653.41		N I	20
6653.75		Cl II	38
6653.78		O I	65
6653.88		Fe I	1052
6656.61		N I	20
6657.54		Cr I	282
6660.49		Si II	
6661.076		Cr I	282
6661.39		Ni I	246
6661.68		Cl II	38
6663.26		Fe I	1195
6663.446		Fe I	111
6665.42	P	Fe I	1156
6665.43	P	Fe I	34
6666.36		A II	25
6666.548		Ti I	101
6666.94		O II	85
6667.17	P	Fe I	110
6667.42	P	Fe I	168
6667.73		Fe I	1228
6669.257		Cr I	282
6671.36		Fe I	1343
6671.41		La II	33
6671.43	P	Fe I	1255
6671.51		Sm I	1
6671.88		Si II	
6672.84		V II	229
6672.88	P	Fe I	205
6673.84	P	Fe I	1254
6675.271		Ba I	6
6676.86	P	Fe I	1194
6677.24		Cr I	256
6677.25		Ti I	274
6677.33		Fe II	210
6677.49	P	Fe I	1280
6677.54	P	Fe I	551
6677.96	P	Fe I	205
6677.993		Fe I	268
6678.03		Zr II	128
6678.149		He I	46
6678.19		O II	85
6678.2764		Ne I	6
6678.60	P	Ti I	213
6678.818		Co I	54
6680.19		Cr I	282
6680.26		Ti II	112
6681.03		Cl II	38
6681.23		Gd II	94
6681.34	P	Fe I	1155
6682.23	P	Fe I	1008
6683.2		He II	7
6684.36		A II	20
6686.04		Cl II	38
6687.57		Y I	1
6690.80		Ni I	140
6692.47	P	Fe I	1192
6693.842		Ba I	6
6695.97		Al I	5
6696.30	P	Fe I	1255
6696.39		Al II	29
6698.63		Al I	5
6699.14		Fe I	1228
6699.46		Al II	29

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
6700.89	P	Fe I	1156	6752.832		A I	11	6823.48		Al II	9
6700.90	P	Fe I	1333	6753.00		V I	31	6824.82	P	Fe I	1280
6700.90	P	Ni I	248	6753.45	P	Fe I	1196	6828.25		Gd I	2
6701.64		Cr I	256	6754.61		Hf II	35	6828.5		C I	21
6702.12		Gd II	130	6754.75		C II	21	6828.610		Fe I	1195
6703.573		Fe I	268	6755.609		Fe I		6829.92		Co I	81
6704.18		Gd II	110	6756.56	P	Fe I	1120	6829.94		V I	31
6704.48	P	Fe I	1052	6756.61		A II	20	6830	P	O V	12
6705.117		Fe I	1197	6757.16		S I	8	6830.83		La II	108
6705.13	P	Fe I	1280	6757.78		Cr I	315	6831.44	P	Fe I	550
6706.20		N I	31	6758.60		N I	30	6831.62		Cl II	44
6707.74		Li I	1	6759.41		Ni I	245	6832.44		V I	31
6707.89		Li I	1	6759.42		Cl II	54	6832.49		Y II	26
6708.27		F I	2	6761.07	P	Fe I	1227	6832.93		Zr I	1
6708.81		N I		6762.38		Zr I	1	6833.24		Fe I	1194
6709.49		La I	6	6762.41		Cr I	315	6834.07		La II	3
6709.88		Ca I	45	6764.13	P	Fe I	1225	6834.26		F I	2
6710.31		Fe I	34	6766.49		V I	31	6835.03		Sc I	
6711.24	P	Fe I	1220	6767	P	O V	12	6835.29		Hf II	13
6712.44	P	Fe I	1279	6767.778		Ni I	57	6836.2		N II	54
6712.68	P	Fe I	206	6769.62		Ba II	8	6837.00		Fe I	1225
6713.14		Fe I	1013,1195	6769.66	P	Fe I	1226	6837.14		Al II	9
6713.43		Cl II	38	6771.040		Co I	54	6837.91		La II	33
6713.76		Fe I	1255	6772.36		Ni I	127	6838.08		Fe I	1192
6714.08		La II	103	6773.97		F I	2	6838.86		Fe I	
6715.38		Cr I	282	6774.28		La II	2	6839.828		Fe I	205
6715.410		Fe I	1174	6775.97		Al II	111	6841.349		Fe I	1195
6716.24		Fe I	1225	6777.44		Fe I	1010,1013	6841.65	P	Fe I	1333
6716.679		Ti I	273	6779.74		C II	14	6841.86		Cl II	54
6717.556		Fe I	1194	6780.27		C II	14	6841.89		V I	31
6717.685		Ca I	32	6783.27	P	Fe I	206	6842.07		Ni I	126
6717.911		Ti II	112	6783.71		Fe I	205	6842.35	P	Si I	61
6718.14		Gd II	130	6783.75		C II	14	6842.668		Fe I	1197
6718.68		La II	129	6784.98		V I	31	6843.671		Fe I	1173
6719	P	N V	11	6785.25	P	Ti II	112	6844.05		Sn II	1
6719.40		Hf II	110	6785.76	P	Fe I	1226	6844.67	P	Fe I	34
6721.35		O II	4	6785.88	P	Fe I	1007	6845.24		Y I	16
6721.97		Si I		6786.41	P	Fe I	551	6845.93	P	Fe I	1190
6722.67		Si I	38	6786.88		Fe I	1052	6846.60		Gd II	94
6723.12		N I	31	6787.09		C II	14	6846.97		O II	45
6725.39		Fe I	1052	6787.15		Zr II	135	6847.60	P	Fe I	1078
6726.25		O I	2	6787.61	P	Fe I	1156	6848.65		Si I	37
6726.50		O I	2	6789.17		Cr I		6848.86	P	Fe I	1192
6726.668		Fe I	1197	6790	P	O V	12	6850.07		Hf II	
6726.78		Fe I		6790.00		Sm II	56	6850.21		Cl II	54
6726.84		C II	21	6791.022		Sr I	3	6850.48		Ni I	157
6727.1	P	C III?	3	6791.30		C II	14	6851.64	P	Fe I	34
6727.83		Gd II	96	6793.26		Fe I	1005	6854.82		Fe I	1224a
6729.72		Cr I	301	6793.62		Fe I		6855.176		Fe I	1195
6729.80	P	Si I	61	6793.71		Y I	1	6855.74		Fe I	1194
6730.38	P	Si I	61	6794.60	P	Fe I	1279	6856.02		F I	2
6730.7	P	C III	3	6795.41		Y II	26	6856.03		Sm II	58
6730.73		Gd I	2	6795.52		F I	2	6857.13		Gd II	122
6730.79		C II	21	6796.11		Fe I	1007	6857.25		Fe I	1006
6731.84		Sm II	59	6798.04		C II	14	6857.3	P	C III	19
6732.06		Fe I	1225	6798.51		Ca I	31	6857.6		N II	71
6732.80		La II	109	6799.32		A II	74	6858.164		Fe I	1173
6732.88		S II	25	6799.61		Yb I	3	6858.25		Y II	26
6733.164		Fe I	1195	6800.50		C II	14	6859.03		La II	34
6733.48		N I	31	6801.16		V II	219	6859.49	P	Fe I	340
6733.56		C II	21	6801.31	P	Fe I	551	6860.13	P	Fe I	1255
6734.16		Cr I	282	6801.38		La II	130	6860.29		Fe I	205
6735.00	P	Fe I	1157	6801.87	P	Fe I	34	6860.96	P	Fe I	341
6736.56	P	Fe I	1122	6803.30	P	Fe I	1192	6861.24		Ni I	293
6737.29	P	Fe I	551	6803.84	P	Fe I	1191	6861.30		A II	25
6737.87		Sc I		6804.020		Fe I	1174	6861.47		Ti I	237
6738.36		C II	21	6804.27		Fe I	1225	6861.93		Fe I	109
6738.81		Cr I	315	6805.72	P	Fe I	1220	6862.481		Fe I	1191
6739.54		Fe I	34	6806.851		Fe I	268	6862.82		Sm II	55
6741.29		N I	31	6808.55		A II	24	6862.9	P	C III	19
6742.05		C II	21	6808.80	P	Fe I	340	6863.52		A II	20
6743.124		Ti I	48	6808.88		La II	1	6864.31	P	Fe I	1186
6743.58		S I	8	6810.28		Fe I	1197	6869.74		O II	45
6744.2	P	C III	3	6812.19		C II	14	6870.22		F I	2
6744.66		Cr I	315	6812.26		N II	54	6870.8		N II	71
6745.11		Fe I	1227	6812.40		V I	31	6871.7	P	C III	19
6745.56	P	Ti I	226	6813.55	P	Fe I	1288	6872.32		Co I	54
6745.96	P	Fe I	1005	6813.598		Ni I	288	6874.09		Ba II	8
6746.433		Ti I	152	6813.68		La II	110	6875.45		Fe I	167
6746.96	P	Fe I	205	6813.85	P	Si I	61	6875.98		Fe I	1013
6748.43		Ti I	152	6814.950		Co I	54	6876.71		Ni I	97
6748.79		S I	8	6816.80		Al II	9	6878	P	O V	12
6749.52	P	Fe I	860	6817.08		Sc I		6878.313		Sr I	3
6750.152		Fe I	111	6818.39		A II	50	6879.51	P	Fe I	1157
6750.22		C II	21	6819	P	O V	12	6879.59	P	Fe I	551
6751.28		Cr I	[illegible]	6819.42	P	Fe I	463	6880.65		Fe I	1061
6751.94		Ti I	152	6819.60	P	Fe I	1061	6881.07	P	Fe I	1174
6752.40		N I	30	6820.43		Fe I	1197	6881.46		Fe I	
6752.67		Gd II	130	6822.00	P	Fe I	1220	6881.64		Cr I	222
6752.724		Fe I	1195	6822.05	P	Fe I	110	6881.74		Fe I	1194

I A	Type	Element	Multiplet No.
6882.48		Cr I	222
6883.04		Cr I	222
6885.07		O II	45
6885.772		Fe I	1173
6886.57		A II	20
6887.63		Gd II	
6888.7		N II	71
6890.88		He II	7
6892.585		Sr I	1
6894.92	P	Mg I	34
6895.29		O II	45
6896.00		Y II	26
6898.31		Fe I	1078
6900.73		Gd II	122
6901.52		Co I	164
6902.46		F I	2
6902.80		Fe I	
6906.54		O II	45
6908.08		Co I	164
6908.11		O II	45
6909	P	O V	12
6909.82		F I	2
6910.75		O II	45
6910.84		Co I	80
6911.52		Fe I	109
6912.43	P	Fe I	341
6914.562		Ni I	62
6916.57		Gd I	2
6916.702		Fe I	1052
6917.52	P	Fe I	1190
6917.93		Al II	75
6919.96		Al II	15
6920.16	P	Fe I	1192
6920.62		Gd II	122
6924.13		Cr I	222
6925.24		Cr I	222
6926.04		Cr I	222
6926.40	P	Fe I	1222
6926.90		N I	29
6928.25		Ni I	110
6928.319		Zn I	10
6928.52	P	Ni I	61
6929.4678		Ne I	6
6929.96	P	Fe I	34
6930.35	P	Fe I	1186
6930.64		Fe I	1221
6932.49	P	Fe I	1220
6933.04		Fe I	1051
6933.55		Y I	1
6933.628		Fe I	167,1005
6935.16		Hf II	35
6936.27		K I	7
6936.48	P	Fe I	1196
6937.81		Co I	139
6938.472		Zn I	10
6942.82	P	Fe I	1008
6942.9		N II	53
6943.202		Zn I	10
6943.67	P	Fe I	1349
6945.208		Fe I	111
6945.22		N I	29
6945.98		Gd II	122
6946.31		Co I	110
6947.501		Fe I	1221,1224
6949.37	P	Fe I	1220
6950.32		Y I	16
6950.82	P	Fe I	205
6951.261		Fe I	1186,1193
6951.62	P	Fe I	1078
6951.68		Y II	33
6952.13		Cl II	54
6952.52		La II	18
6953.01	P	Fe I	815
6954.54		La II	1
6955.06		Ni I	157
6957.95		S II	18
6958.11		La II	67
6959.24		Gd II	130
6960.334		Fe I	1222
6963.02	P	Fe I	1007
6964.18		K I	7
6964.69		K I	7
6965.42	P	Mg I	33
6965.4302		A I	1
6966.35		F I	6
6966.9		Fe II	198
6967.6		N II	53
6968.78		La II	109
6970.48	P	Fe I	463
6971.66		Gd II	130
6971.95		Fe I	404
6975.46		Fe I	
6976.306		Fe I	1194
6976.53		Si I	60
6976.8		N II	53
6976.934		Fe I	1221
6977.445		Fe I	1225
6978.46		Cr I	222
6978.855		Fe I	111
6979.10		N I	29
6979.17	P	Fe I	340
6979.82		Cr I	222
6980.86		Gd II	
6980.91		Cr I	222
6980.91		Hf II	22
6981.40		S II	18
6983.53	P	Fe I	1220
6983.54	P	Fe II	63
6985.74		A II	137
6985.89		Gd II	
6988.530		Fe I	167
6988.75		Gd II	130
6989.64	P	Fe I	1191
6990.16		A II	20
6991.92		Gd I	2
6995.35		Ta I	5
6996.63		Ti I	256
6996.76		Gd II	121
6997.13	P	Fe I	1273
6997.83		Hf II	89
6999.902		Fe I	1051
7000.633		Fe I	1005
7000.75		Gd II	122
7001.57		Ni I	64
7001.93		O I	21
7002.22		O I	21
7003.0		N II	53
7003.58		Si I	60
7004.60		Ti I	256
7004.81		Co I	89
7005.84		Si I	60
7006.16		Gd II	130
7007.81		Ti I	100
7008.014		Fe I	1078
7008.35		Ti I	256
7010.362		Fe I	1221
7010.94		Ti I	256
7011.364		Fe I	1221
7014.99		Fe I	167
7015.3		N II	53
7016.075		Fe I	109
7016.436		Fe I	1051
7016.602		Co I	54
7016.90	P	Si I	51
7016.99		Hf II	99
7017.68		Si I	51
7017.73		Gd II	137
7017.98		Si I	51
7020.44		Sm II	59
7021.23		Hf II	67
7022.39	P	Fe I	1078
7022.976		Fe I	1051
7024.0508		Ne I	6
7024.084		Fe I	1003
7024.649		Fe I	1187
7024.86		Ni I	271
7025.52		O I	32
7027.60		Fe I	1221
7027.797		Co I	179
7028.58	P	Fe I	463
7028.60	P	Ni I	156
7028.95	P	Ni I	61
7030.06		Ni I	126
7030.33		Hf II	66
7031.02	P	Fe I	1173
7031.42	P	Fe I	1278
7032.16		Ni I	279
7032.4127		Ne I	1
7034.06	P	Fe I	1190
7034.08	P	Fe I	1190
7034.42		Ni I	97
7034.96		Si I	50
7035.86		Ti I	307
7037.04	P	Fe I	61
7037.26		Gd II	
7037.37		Ni I	288
7037.45		F I	6
7038.251		Fe I	1051
7038.80		Ti I	256
7038.818		Fe I	1078
7039.22		Sm II	57,61
7039.36		Ti I	307
7042.06		Al II	3
7042.24		Sm II	58
7044.60		Fe I	1276
7045.8		C II	26
7045.96		La I	6
7050.65		Ti I	256
7051.00		Gd II	122
7052.872		Co I	54
7052.9		C II	26
7053.48	P	Fe I	1186
7054.042		Co I	140
7054.62		Gd II	130
7055.01		A II	74
7056.60		Al II	3
7057.96	P	Fe I	815
7058.02		Gd II	130
7059.941		Ba I	5
7060.43	P	Mg I	32
7061.90		Hf II	
7062.80	P	Fe I	1273
7062.97		Ni I	64
7063.4		C II	26
7063.57		Ni I	270
7063.64		Al II	3
7065.15		Ti I	100
7065.188		He I	10
7065.719		He I	10
7066.15	P	Fe I	1277
7066.24		La II	1
7067.2170		A I	1
7067.44		Fe II	
7067.50		Ni I	277
7068.02	P	Fe I	1276
7068.37		La I	1
7068.415		Fe I	1004
7068.60	P	Fe I	1276
7069.11		Ti I	307
7069.54	P	Fe I	205
7070.071		Sr I	3
7071.88		Fe I	1194
7072.82	P	Fe I	1003
7074.45	P	Fe I	1173
7077.03		A II	20
7077.10		Eu II	8
7079.32	P	Fe I	1278
7082.22		Ni I	267
7082.37		Sm II	55
7083.396		Fe I	1277
7084.25	P	Ti I	99
7084.33		Si I	60
7084.974		Co I	54
7085.52		Gd II	130
7086.76		Fe I	815,1311
7087.35		Zr I	42
7089.03	P	Si I	70
7089.73	P	Fe I	1220
7090.404		Fe I	1051
7090.55		A II	60
7091.83		Fe I	1278
7091.91	P	Fe I	1277
7093.10	P	Fe I	1189
7094.30	P	Fe I	778
7095.40		Ni I	276
7095.425		Fe I	1105
7097.78		Zr I	42
7100.20	P	Fe I	267
7101.28	P	Fe I	61
7102.95		Zr I	42
7103.15	P	Fe I	167
7103.28		N IV	4
7103.77		Zr I	42
7105.34	P	Si I	70
7105.90	P	Fe I	1008
7107.30	P	Fe I	1324
7107.461		Fe I	1005
7109.48		N IV	4
7109.67	P	Fe I	1190
7110.91		Ni I	64
7111.28		N IV	4
7111.71		Zr I	23
7112.176		Fe I	404
7112.36		C II	20
7114.55	P	Fe I	267
7115.13		C II	20
7115.25	P	Fe I	1186
7116.77		Gd II	130
7118.12	P	Fe I	1278
7118.5		C I	26

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
7118.86		Gd II	130	7193.74		Y II	33	7284.27		A II	24
7119.45		C II	20	7193.89		Si I	25	7284.843		Fe I	1004
7120.01	P	Fe I	1187	7194.02	P	Fe I	1307	7285.28		Co I	140
7120.56	P	Fe I	1006	7194.81		Eu II	8	7285.286		Fe I	1188
7122.24		Ni I	126	7194.92		Fe I	1273	7285.94	P	Si I	58
7123.10		N IV	4	7195.235		Ba I	10	7286.56		Ni I	109
7124.28		S II	18	7196.37	P	Fe I	1252	7287.36		Fe II	197
7124.47		Co I	53	7196.83		Cr I	264	7288.760		Fe I	1077
7125.00	P	Fe I	815	7197.07		Ni I	62	7289.05	P	Fe II	72
7125.28	P	Fe I	1220	7197.08		Gd II	121	7289.25		Si I	24
7125.49		C II	20	7202.194		Ca I	29	7290.21		Si I	24
7126.71		Ni I	97	7202.37		F I	6	7290.87		Ni I	287
7127.21		N IV	4	7205.51	P	Fe I	1251	7291.03	P	Ti I	143
7127.58	P	Fe I	1273	7207.123		Fe I	1001	7291.48		Ni I	63
7127.88		F I	6	7207.406		Fe I	1051	7292.856		Fe I	1189
7129	P	N IV	4	7207.85		Cr I	264	7293.068		Fe I	1077
7129.30	P	Fe I	1219	7208.20		Si I	25	7295.00		Fe I	1187
7130.34	P	Ti I	100	7209.44		Ti I	99	7295.27	P	Fe I	1189
7130.942		Fe I	1051	7212.47		Fe I	1273	7297.75		Ni I	293
7131.29		Al II	114	7213.35		Ti I	143	7299.67		Ti I	97
7132.989		Fe I	1002	7213.84	P	Fe I	1105	7300.47		Fe I	1275
7133.16		Gd II	137	7214.78	P	Ti II	101	7300.59	P	Fe I	1003
7133.52		C II	20	7214.97		Ti I	314	7301.17		Eu II	8
7134.290		Co I	179	7216.20		Ti I	98	7301.57	P	Fe II	72
7134.66		Al II	114	7216.68	P	Fe I	1273	7302.89		Mn I	50
7134.99		Fe II	197	7217.0		N II	52	7305.87		Ti I	143
7135.73		Gd II		7217.34		Co I	126	7306.61		Fe I	1077
7138.05	P	Ti I	98	7217.55		Eu II	8	7307.938		Fe I	1002
7138.81		Al II	114	7218.57		Cr I	264	7307.97		Fe II	73
7138.91		Ti I	99	7219.686		Fe I	1001	7310.24		Fe II	73
7139.79		S II	18	7220.79		Ni I	294	7311.02		F I	5
7139.8		N II	52	7221.22		Fe I	1189	7311.101		Fe I	1077
7141.17		Gd II	131	7222.39		Fe II	73	7311.26	P	Fe I	1105
7141.62		Ni I	283	7222.88		Fe I	1187,1311	7312.05	P	Fe I	1310
7142.522		Fe I	1274	7223.668		Fe I	463	7315.73		Co I	89
7145.317		Fe I	1186,1193	7224.51		Fe II	73	7316.77	P	Fe I	267
7146.13		Gd II	130	7225.82	P	Fe I	1278	7317.03		S II	18
7147.0406		A I	1	7226.20		Si I	26	7317.40	P	Fe I	1278
7147.31		Gd II		7228.70		Fe I	267	7318.39		Ti I	212
7148.147		Ca I	30	7228.974		Pb I	2	7320.694		Fe I	1188,1276
7148.61		Ta I	11	7231.12		C II	3	7320.70		Fe II	73
7148.69		Fe I	1078,1339	7233.58		A II		7323.20	P	Ti II	101
7151.18	P	Sc II	27	7235.32		Si I	26	7323.38	P	Fe I	859
7151.495		Fe I	109	7235.86		Si I	25	7324.89		Gd II	
7154.688		Co I	89	7236.19		C II	3	7325.33	P	Fe I	980
7155.64		Fe I	1276	7236.91		S II	18	7326.146		Ca I	44
7156.80		O I	38	7239.885		Fe I	1105	7326.51		Mn I	50
7158.502		Fe I	815	7242.24		Gd II	137	7327.67		Ni I	140
7160.33		Ti I	98	7244.77		S I	15	7328.64		Hf II	65
7160.85	P	Fe I	1310	7244.86		Fe I	1276	7330	P	N V	12
7161.04	P	Fe I	1190	7244.86		Ti I	99	7330.16	P	Fe I	1187
7162.37	P	Fe I	1278	7245.1668		Ne I	3	7330.54	P	Mn II	4
7164.469		Fe I	1051	7247.82		Mn I		7330.97		Ti I	143
7164.63		S II	18	7250.12		Co I	53	7331.95		F I	1
7164.75		Si I	49	7250.69		Si I	25	7332.26		Ti I	143
7164.90		Gd II	130	7251.74		Ti I	99	7332.97		Y II	25
7165.09	P	Si I	49	7252.70		Gd II	109	7333.49		Ni I	263
7165.62		Si I	48	7253.76		Ti I	143	7333.62		Fe I	1078
7167.01		Ni I	109	7254.19		O I	20	7334.66		Fe II	209
7168.37		Gd I	1	7254.47		O I	20	7336.03		Zr I	23
7169.14		Zr I	42	7254.649		Fe I		7337.61		S II	18
7170.14		Ni I	282	7255.28	P	Si I	59	7337.78	P	Ti I	212
7172.26		Gd II	109	7256.13	P	Fe I	1278	7338.92		V I	117
7173.73		Ni I	269	7256.63		Cl I	5	7340.78	P	Fe I	684
7173.9389		Ne I	6	7256.72		Ni I	97	7341.78	P	Fe I	1307
7175.937		Fe I	1188	7256.96		S II	18	7344.18	P	Fe I	266
7176.886		Fe I	1276	7259.3		N II	52	7344.72		Ti I	97
7177.50		He II	6	7261.00	P	Fe I	267	7346.37		Ta I	12
7178.33	P	Sc II	27	7261.29	P	Fe I	1273	7347.16	P	Fe I	266
7179.16	P	Fe II	72	7261.54		Fe I	1188	7347.72	P	Mn II	4
7180.020		Fe I	33	7261.94		Ni I	62	7348.11		A II	60
7181.21	P	Fe II	72	7262.46	P	Fe I	859	7348.51	P	Fe I	1004
7181.222		Fe I	1078	7264.19		Y II	33	7350.55	P	Fe I	509
7181.93		Fe I	1274	7264.99		Fe II	197	7351.160		Fe I	1273
7182.00		Ni I	126	7266.22		Ni I	288	7351.56		Fe I	1275
7184.54		Si I	25	7266.29		Ti I	143	7352.16		Ti I	272
7184.89		Si I	25	7267.00	P	Fe I	61	7353.52	P	Mn II	4
7185.50		Cr I	264	7268.58	P	Fe I	957	7353.528		Fe I	1251
7187.341		Fe I	1051	7271.41		Ti I	97	7354.579		Co I	53
7188.06		Cr I	264	7273.20		S II	18	7355.46	P	Ti II	101
7188.55		Ti I	99	7273.77		Ti I	212	7355.94		Cr I	93
7188.7		N II	52	7275.28		Si I	24	7356.51		V I	117
7189.17		Fe I	463	7277.67		Hf II	66	7356.81	P	Fe I	1187
7189.57		Gd II	138	7278.48	P	Fe I	1274	7357.74		Ti I	97
7189.89		Ti I	285	7278.72		Hf II	111	7359.95	P	Fe I	1310
7190.12	P	Fe I	463	7280.298		Ba I	5	7361.39		V I	117
7191.66		Fe I	1274	7281.349		He I	45	7361.56	P	Ti I	212
7193.20	P	Mg I	31	7282.36		La II	1	7361.59		Al I	11
7193.23		Fe II	197	7282.39		Fe I	1274	7362.31		Al I	11
7193.56		Si I	25	7283.80		Mn I	50	7363.16		V I	117

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
7363.96		Fe I	1274	7449.34		Fe II	73	7559.62		Ni I	292
7364.11		Ti I	97	7449.42		Al II	96	7559.68		Fe I	1308
7366.37		Fe I	1188	7450.32		Y II	25	7561.08		Hf II	80
7366.60		Ti I	96	7452.08	P	Fe I	1303	7563.03		Fe I	1257
7369.73	P	Mn II	4	7454.02		Fe I	1001	7565.53		Cl II	
7370.16		Fe I	1250	7455.47	P	Si I	75	7567.35		Ni I	291
7370.22		Eu II	8	7458.92		Ni I	291	7568.925		Fe I	1077
7373.02		Si I	58	7461.28	P	Fe I	1351	7573.41		F I	1
7373.07	P	Fe I	108	7461.534		Fe I	204	7573.53		Fe I	
7376.434		Fe I		7462.37		Cr I	93	7573.76	P	Fe I	957
7376.46		Fe II		7462.38		Fe II	73	7574.08		Ni I	156
7380.45		A II		7463.38	P	Fe I	1307	7578.07		Cl II	79
7381.94		Ni I	292	7466.44	P	Ti I	142	7578.96		S I	
7382.63	P	Fe I	266	7468.29		N I	3	7580.55		Ti I	211
7382.99		Fe I	1188	7468.41		Ca I		7582.15	P	Fe I	1274
7384.96	P	Fe I	1308	7471.36		O I	55	7583.796		Fe I	402
7385.24		Ni I	84	7471.41		Al II	21	7586.044		Fe I	1137
7385.54	P	Fe I	1251	7471.75	P	Fe I	267	7586.72		Co I	139
7385.97		Gd II	139	7473.23		O I	55	7588.30	P	Fe I	1306
7386.21		Ni I	286	7473.56		Fe I	1188	7588.48		Zn II	2
7386.394		Fe I	1275	7474.50	P	Fe I	957	7590.57		Co I	89
7387.10	P	Mn II	4	7474.60	P	Fe I	980	7592.74		He II	6
7387.70	P	Mg I	30	7474.94		Ti I	142	7605.32		Fe I	1308
7388.46		Y II	37	7476.40	P	Fe I	1251	7607.17		F I	4
7388.689		Co I	139	7476.45		O I	55	7610.24		Co I	126
7389.34	P	Fe I	1274	7476.92	P	Fe I	1004	7614.50		Ti I	211
7389.425		Fe I	1077	7477.21		O I	55	7617.00		Ni I	139
7392.18	P	Si I	75	7477.52	P	Fe I	957	7617.19	P	Fe I	1304
7392.411		Ba I	10	7478.77		Co I	53	7617.86		A II	73
7393.63		Ni I	109	7478.79		Zn II	1	7617.97	P	Fe I	1001
7394.90		Gd II	109	7478.87	P	Fe I	683	7619.21		Ni I	156
7396.50	P	Fe I	1278	7479.06		O I	55	7620.538		Fe I	1250
7398.68		F I	1	7479.70	P	Fe II	72	7624.48		Al II	91
7398.72		Co I	164	7480.66		O I	55	7624.75		Ni I	292
7398.78	P	Fe I	684	7481.49		Ni I	286	7627.85		Al II	91
7398.96		Hf II	110	7481.74	P	Fe I	266	7629.82		S I	
7398.98	P	Fe I	1306	7481.93	P	Fe I	1250	7634.50		Co I	183
7400.23		Cr I	93	7482.20	P	Fe I	1308	7635.1053		A I	1
7400.87	P	Fe I	204	7482.72		F I	1	7635.33		Al II	91
7401.13		Ni I	291	7483.48		La II	1	7639.99		O I	42
7401.17	P	Ni I	283	7484.28	P	Fe I	1306	7647.83	P	Fe I	1137
7401.689		Fe I	1004	7486.13	P	Fe I	980	7650.95	P	Fe I	266
7405.85		Si I	23	7488.083		Ba I	5	7653.783		Fe I	1250
7406.23		Co I	164	7488.73		Ni I	157	7654.44		Ti I	211
7406.23		Y II	25	7489.14		F I	5	7655.47		Fe II	73
7409.11		Si I	23	7489.61		Ti I	225	7657.30		Ni I	278
7409.17	P	Ni I	283	7491.678		Fe I	1077	7657.60		Mg I	22
7409.39		Ni I	139	7494.72	P	Fe I	33	7661.223		Fe I	1077
7411.178		Fe I	1077	7495.088		Fe I	1077	7661.46	P	Fe I	1309
7414.10		Cl I	4	7495.67	P	Fe I	1275	7663.09		Hf II	68
7414.51		Ni I	62	7496.12		Ti I	225	7663.45		O I	42
7415.19	P	Fe I	1308	7498.56		Fe I	1001	7664.15	P	Fe I	1250
7415.37		Si I	23	7501.25	P	Fe I	1002	7664.302		Fe I	402
7415.78	P	Mn II	4	7501.81		Ni I	282	7664.907		K I	1
7416.00		Si I	22	7503.8676		A I	8	7665.02		S II	70
7417.38		Co I	89	7505.35		Gd II	109	7665.48		O I	42
7418.32	P	Fe I	1002	7505.98	P	Fe I	1306	7672.092		Ba I	5
7418.674		Fe I	1001	7507.300		Fe I	1137	7672.44		Cl I	3
7419.35		Ni I	287	7508.53	P	Fe I	1274	7677.46		Mn I	54
7420.20	P	Fe I	1307	7509.03		S II	24	7679.60		S I	7
7421.60		Fe I	1188	7510.74		Au I	2	7680.22		Mn I	55
7422.30		Ni I	139	7511.045		Fe I	1077	7680.35		Si I	36
7423.17		Ti I	97	7512.12	P	Fe I	108	7686.13		S I	7
7423.54		Si I	23	7512.17	P	Fe I	1001	7687.779		Ag I	2
7423.63		N I	3	7514.93		F I	1	7689.10	P	Fe I	1304
7424.63		Si I	23	7515.88		Fe II	73	7689.36		A II	
7425.12	P	Fe II	209	7521.09		Ni I	282	7691.57	P	Mg I	29
7425.64		F I	1	7522.78		Ni I	126	7696.73		S I	7
7426.57		Eu II	8	7525.14		Ni I	139	7698.979		K I	1
7430.58		Fe I	204	7526.2		Al II	119	7699.49		Yb I	3
7430.73		Fe I	1351	7526.72	P	Fe I	1352	7706.52		Mn I	54
7430.90		Fe I	1189	7528.15	P	Fe I	1307	7706.77		O I	42
7431.17	P	Si I	89	7531.171		Fe I	1137	7709.78		Al II	113
7431.94	P	Fe I	1189	7533.42		Fe II	72	7709.98		Mn I	54
7431.98	P	Ti I	142	7534.83	P	Fe II	87	7710.390		Fe I	1077
7432.27	P	Mn II	4	7537.44	P	Fe I	1000	7711.71		Fe II	73
7433.48		Ni I	280	7537.97	P	Fe I	1352	7712.42		Mn I	55
7437.16		Co I	53	7540.44	P	Fe I	266	7712.661		Co I	126
7438	P	O V	17	7541.61		Fe I	957	7714.27		Ni I	62
7439.89		Zr I	23	7545.69		Ni I	287	7715.63		Ni I	109
7440.54		A II	60	7546.177		Fe I		7717.57		Cl I	4
7440.60		Ti I	225	7547.06		Cl I	5	7719.05	P	Fe I	1304
7440.98		Fe I	1273	7547.89	P	Fe I	1306	7720.68	P	Fe I	1304
7442.28		N I	3	7551.10	P	Fe I	1303	7722.60	P	Mg I	44
7443.031		Fe I	1002	7552.24		F I	1	7723.20		Fe I	108
7443.26	P	Fe I	1309	7552.52	P	Ni I	286	7723.7597		A I	1
7445.70	P	Fe I	107	7552.79	P	Fe I	1303	7724.2064		A I	6
7445.776		Fe I	1077	7553.970		Co I	183	7727.66		Ni I	156
7447.43		Fe I	1273	7554.73		Zr I	23	7732.50		Zn II	2
7448.00	P	Fe I	1352	7555.60		Ni I	187	7733.24		Mn I	54

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
7733.50		Gd I	1	7909.60	P	Fe I	1287	8035.39		Si I	57
7733.68	P	Fe I	1306	7910.50		Cr I	316	8043.306		Co I	193
7734.43		Mn I	55	7911.338		Ba I	1	8046.073		Fe I	1136
7735.99		Ni I	281	7912.55		Si I	68	8046.78	P	Si I	73
7737.67	P	Fe I	1137	7912.866		Fe I	12	8047.60		Fe I	12
7742.7		Si I		7913.47		Si I	35	8048.70		Sm II	67
7742.71		Fe I	1306	7917.48		Ni I	109	8051.91		S II	31
7743.2		Si I		7917.85		Cr I	316	8055.996		Co I	193
7743.27		Co I	183	7918.38		Si I	57	8058.14		Zr I	41
7744.94		Cl I	5	7923.95		S I	22	8061.27		Cr I	300
7745.05		S II	70	7924.14	P	Fe I	1250	8063.10		Zr I	40
7745.48	P	Fe I	1305	7924.62		Cl I	4	8065.99		Al I	16
7746.56	P	Fe I	1309	7926.37		Ti I	308	8066.05	P	Ti I	151
7748.281		Fe I	402	7928.14		Sm II	65	8066.20		Y II	31
7748.37		Gd II	142	7928.84		S I	22	8068.24		Ti I	151
7748.93		Ni I	156	7930.25		Gd II		8068.46		Sm II	68
7751.18		Fe I	1304	7930.33		S I	22	8070.12		Zr I	40
7754.70		F I	4	7930.83	P	Mg I	42	8070.64	P	Si I	67
7755.15		Mn I	55	7931.70		S I	22	8072.16	P	Fe I	108
7757.89		Hf II	66	7932.20		Si I	57	8075.13		Fe I	12
7764.72		Mn I	54	7933.130		Cu I	6	8075.37		Al I	16
7766.72	P	Fe I	957	7937.166		Fe I	1136	8080.55	P	Ti I	195
7771.74		Cr I		7938.53	P	Ti I	151	8080.668		Fe I	623
7771.96		O I	1	7939.49		O I	35	8082.4580		Ne I	6
7774.18		O I	1	7941.09		Fe I	623	8084.98		Cr I	299
7775.40		O I	1	7941.84	P	Fe I	508	8085.200		Fe I	1136
7780.479		Ba I	5	7942.02		Cr I	300	8085.29		S II	69
7780.586		Fe I	1154	7942.91		Mn I		8086.18	P	Si I	67
7788.95		Ni I	62	7943.15		O I	35	8086.67		S II	31
7797.62		Ni I	201	7943.1802		Ne I	18	8086.91		Al II	116
7798.90	P	Fe I	403	7943.93		Ti I	308	8089.86		S II	69
7800.0		Si I	81	7943.94		Si I	57	8089.96		Gd II	145
7800.22		F I	4	7944.65		Zr I	40	8092.634		Cu I	6
7800.227		Rb I	1	7945.878		Fe I	1154	8093.25		S II	68
7802.49	P	Fe I	1303	7945.98	P	Fe I	107	8093.32		Si I	34
7807.97	P	Fe I	1303	7947.204		O I	35	8093.48		V I	30
7808.04		Fe I		7947.56		O I	35	8093.932		Co I	189
7809.24		Co I	79	7947.60		Rb I	1	8095.93		Ni I	290
7809.4		Na I	20	7948.1754		A I	6	8096.874		Fe I	999
7810.81	P	Fe I	1303	7949.17		Ti I	125	8098.50	P	Ti I	195
7811.14	P	Mg I	43	7950.83		O I	35	8098.72	P	Mg I	41
7812.31		Al II	90	7952.18		O I	35	8103.6922		A I	3
7813.62	P	Fe I	1305	7953.11		Ni I	266	8108.33	P	Fe I	265
7815.83		Al II	90	7954.94	P	Fe I	402	8112.13		Co I	183
7816.16		He I	69	7955.81		Fe I	1305	8112.17	P	Fe I	265
7820.80	P	Fe I	1118	7956.69		Zr I	41	8114.93		S II	69
7821.47		S II	31	7959.21		Fe I	1304	8115.3115		A I	1
7823.72		Al II	90	7961.58		Ti I	308	8116.80		V I	30
7826.81		Ni I	109	7963.25		Gd II		8119.13		Cr I	299
7832.224		Fe I	1154	7964.93	P	Fe I	1303	8119.72		Al II	110
7835.08		Sm II	69	7965.52	P	Fe I	1305	8121.89		Al II	110
7835.33		Al I	10	7967.03	P	Fe I	1000	8122.08		Al II	110
7836.15		Al I	10	7967.43		S II	12	8123.52		Al II	110
7837.27		Sm II	64	7970.26		Si I	57	8126.52		Li I	3
7838.09	P	Fe II	87	7978.88		Ti I	151,308	8128.28		Cr I	300
7841.40	P	Fe II	72	7980.04	P	Fe I	1304	8129.32	P	Fe I	265
7844.55	P	Fe I	1250	7980.58		Cl I	2	8133.00		Zr I	40
7844.87		Gd II		7981.97		O I	19	8133.02		S II	68
7846.35		Gd II		7982.41		O I	19	8133.36	P	Ti I	195
7846.47	P	Fe I	1323	7983.66		Hf II	99	8136.4060		Ne I	23
7849.38		Zr I	40	7987.00		O I	19	8144.58		V I	30
7850		C I	32	7987.34		O I	19	8145.47		Fe I	
7850.5		Si I	81	7987.36		Co I	89	8146.67	P	Fe I	623
7852.74	P	Ti I	34	7989.36		Cr I	300	8149.59		Fe I	1217,1218
7855.12		Ni I	267	7994.473		Fe I		8150.57	P	Si I	20
7855.41	P	Fe I	1305	7995.00	P	Si I	21	8151.95		Co I	193
7861.10		Ni I	156	7995.12		O I	19	8160.15		Al II	118
7861.22		Hf II	66	7996.53		Ti I	308	8161.06		V I	30
7863.79		Ni I	268	7996.80		Co I	79	8163.22		Cr I	298
7869.65		Fe I	1137	7997.80		Cl I	3	8166.66		Cr I	298,299
7869.868		Co I	189	7997.85		S II	69	8167.94		Cr I	291
7870.00		Zr I	41	7998.972		Fe I	1136	8169.80		Cr I	300
7871.370		Co I	189	8002.55	P	Fe I	1217	8171.30	P	Fe I	1322
7877.13		Mg II	8	8005.24		S II	68	8179.03		Fe I	1136
7878.22		Cl I	3	8006.1556		A I	3	8179.31		S II	69
7879.75	P	Fe I	1306	8009.39	P	Si I	74	8179.43	P	Si I	33
7881.90		Y II	32	8014.7856		A I	1	8183.256		Na I	4
7885.00	P	Ti I	34	8016.51	P	Fe I	1249	8184.80		N I	2
7885.26		S II	68	8018		C I	31	8185.69		Cr I	299
7886.31		O I	64	8018.04		Cr I	299	8186.73		V I	30
7890.22		Ni I	200,267	8018.70		S II	68	8186.80		Fe I	1272
7895.50	P	Ti I	34	8024.50		Fe I		8187.95		N I	2
7896.37		Mg II	8	8024.84		Ti I	151	8194.35		Cl I	2
7898.38	P	Si I	69	8025.12		Sm II	63	8194.791		Na I	4
7904.12	P	Fe I	403	8026.32		Sm II	67	8194.824		Na I	4
7905.751		Ba I	10	8027.36		V I	30	8196.52	P	Fe I	1217
7908.06		Gd II	120	8027.96	P	Fe I	623	8198.87		V I	30
7908.30		Cr I	316	8028.341		Fe I	1154	8198.951		Fe I	1154
7908.679		Co I	189	8032.03		Sm II	61	8200.31		N I	2
7909.34	P	Ti I	308	8034.56		Ni I	109	8201.73		Zr I	40

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
8203.2	P	Ca II	13	8316.38		Gd II		8428.342		O I	54
8203.572		H	14	8317.45		Si I	19	8428.94		As I	4
8204.10	P	Fe I	12	8322.06		Cr I	298	8429.128		O I	54
8204.93	P	Fe I	12	8323.428		H	12	8429.36		Y II	
8207.767		Fe I	1136	8323.44		Cr I	298	8431.20		Mn I	53
8208.57		Co I	193	8327.063		Fe I	60	8434.51	P	Fe I	1270
8210.64		N I	2	8331.941		Fe I	1153	8434.98		Ti I	33
8211.48		Si I	19	8333.29		Cl I	2	8435.28	P	Si I	8
8212.00		Cl I	2	8333.785		H	11	8435.68		Ti I	33
8212.43		Mn I		8334.37		Ti I	33	8437.958		H	10
8212.59		Zr I	40	8335.19		C I	10	8438.93		Ti I	224
8213.02	P	Mg I	28	8338.43		Si I	33	8439.603		Fe I	1172
8216.28		Cr I	299	8338.83		Cr I	298	8442.58		Gd II	
8216.28		N I	2	8339.431		Fe I	1153	8442.98		Ti I	210
8217.8	P	Mg II	7	8342.21	P	Fe I	401	8444.00		Si I	46
8220.40		Cl I	3	8342.95		Fe I	1270	8444.48		Si I	46
8220.406		Fe I	1136	8345.20	P	Fe I	265	8446.35		O I	4
8221.63		S II	31	8345.553		H	11	8446.42	P	Fe I	1272
8221.73		Cl I	3	8346.13	P	Mg I	40	8446.56	P	Fe I	1267
8221.84		O I	34	8348.28		Cr I	56	8446.76		O I	4
8222.15		S II	68	8348.68		Sm II	64	8447.41	P	Fe I	1266
8223.07		N I	2	8349.05	P	Fe I	12	8447.63	P	Fe I	12
8223.16		S II	68	8353.15		Ti I	33	8449.54		S I	14
8224.09		Cr I	98	8354.35		Al II	40	8450.26		Cr I	56
8225.15		S II	69	8355.16	P	Fe I	1050	8450.89		Ti I	224
8225.67		Cr I	299	8356.07	P	Fe I	1117	8451.55		S I	14
8227.64		O I	34	8358.53	P	Fe I	401	8452.14		S I	14
8230.01		O I	34	8359.006		H	11	8455.24		Cr I	56
8230.67		Si I	19	8359.23		Al II	40	8457.10		Ti I	141
8232.347		Fe I	1136	8359.57		Al II	40	8459.01	P	Fe I	1270
8232.99		O I	34	8360.63		Cl II	5	8461.41	P	Fe I	814
8233.30		S II	68	8360.822		Fe I	1153	8464.02	P	Fe I	1330
8235.31		O I	34	8361.77		He I	68	8464.65		Zr I	40
8235.89		Cr I	298	8361.95		S II	31	8465.23	P	Fe I	1270
8236.13		Hf II	65	8363.30		Al II	40	8466.10	P	Fe I	1269
8236.77		He II	6	8363.52		Al II	40	8466.54	P	Fe I	999
8238.29		Cr I	298	8363.58	P	Ti I	182	8467.15		Ti I	182
8238.4	P	Mg II	7	8364.24		Ti I	33	8467.256		H	10
8239.130		Fe I	108	8365.642		Fe I	623	8468.413		Fe I	60
8241.61		V I	30	8369.87	P	Fe I	1271	8468.46		Ti I	150
8242.34		N I	2	8370.21		Zr I	40	8471.75		Fe I	1270
8248.151		Fe I	1136	8372.79		Co I	193	8480.63	P	Fe I	1272
8250.2	P	Ca II	13	8374.478		H	11	8481.96	P	Fe I	999
8253.51		V I	30	8375.95		Cl I	2	8483.16		Ti I	150
8253.78	P	Fe I	1216	8376.41		Ne I	12	8485.99		Sm II	66
8254.10		Be I	2	8377.6068		Ne I	12	8493.79	P	Fe I	1269
8254.34	P	Fe I	508	8377.79		S II	31	8494.42		Ti I	141
8255.153		H	14	8377.90		Ti I	33	8495.3600		Ne I	18
8255.90		V I	30	8379.44		Co I	193	8495.51		Ti I	210
8256.1	P	Ca II	13	8380.77		Mn I		8496.03		Ti I	209,313
8257.859		H	14	8382.23	P	Fe I	12	8496.51	P	Fe I	1136
8258.27		S II	31	8382.54		Ti I	33	8497.00		Fe I	1172
8260.938		H	14	8382.82		Ti I	33	8498.018		Ca II	2
8261.95		Cr I	98	8386.24	P	Ti I	182	8498.44		Zr I	40
8263.86	P	Fe I	1272	8387.781		Fe I	60	8501.50		Si I	47
8264.27		Fe I	1332	8389.42		Zr I	40	8501.81		Ni I	186
8264.288		H	14	8389.48		Ti I	182	8502.38		Si I	46
8264.5209		A I	8	8392.400		H	11	8502.487		H	10
8266.076		Ne I	27	8395.87		Mn I	53	8503.17		Si I	
8267.941		H	13	8396.93		Ti I	33	8509.63	P	Fe I	1136
8269.66	P	Fe I	1218	8397.04		Cr I	57	8510.90		Sm II	64
8271.934		H	13	8397.96	P	Si I	18	8512.95	P	Fe I	462
8273.46		S II	31	8401.42		Fe I	108	8514.075		Fe I	60
8273.519		Ag I	2	8401.68	P	Fe I	1136	8514.64	P	Si I	18
8274.28		Fe I	1332	8402.54		Ti I	224	8515.08		Fe I	401
8275.91		Fe I	1270	8408.208		A I	8	8515.48		S II	37
8276.310		H	13	8409.88		Mn I	53	8518.05		Ti I	182
8281.125		H	13	8412.36		Ti I	33	8518.37		Ti I	150
8286.434		H	13	8413.321		H	10	8519.05	P	Fe I	1267
8287.38		Cr I	298	8414.00		Zr I	40	8520.23		S II	34
8290.62		Cr I	298	8414.08	P	Fe I	1154	8521.10		Cs I	1
8292.309		H	12	8416.97		Ti I	224	8521.4407		A I	8
8293.527		Fe I	623	8417.24		Ni I	156	8522.64		S II	62
8296.90		Cr I	57	8417.54		Ti I	182	8525.04	P	Fe I	1215
8297.58		Cr I	297	8417.89	P	Si I	18	8526.685		Fe I	1270
8298.837		H	12	8418.4274		Ne I	18	8527.32	P	Si I	18
8300.01	P	Fe I	1331	8418.70		Ti I		8527.88	P	Fe I	1270
8300.3258		Ne I	12	8420.968		O I	54	8531.36		Ti I	141
8303.11	P	Fe I	265	8422.39		S II	37	8533.38		Si I	80
8303.19		Cr I	57	8422.95		Fe I	999	8538.02	P	Fe I	1266
8305.62		As I	5	8423.10		Ti I	150	8539.36		Ti I	209
8305.79		Sm II	69	8424.14		Fe I	1272	8541.65		As I	3
8305.94		Zr I	40	8424.41		Ti I	182	8542.089		Ca II	2
8306.115		H	12	8424.647		A I	3	8543.72		Cr I	56
8306.80		Si I	19	8424.780		O I	54	8545.384		H	10
8307.41		Ti I	33	8425.37		S II	62	8548.07		Ti I	150
8307.61	P	Fe I	12	8425.89	P	Fe I	12	8548.83		Cr I	56
8310.98	P	Fe I	12	8426.326		O I	54	8550.34	P	Si I	88
8314.262		H	12	8426.50		Ti I	33	8550.46		Cl I	13
8314.73		S II	12	8428.25		Cl I	2	8550.54		Ti I	141

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
8555.54		Cr I	56	8680.77	P	Fe I	999	8819.42	P	Fe I	1266
8556.64		Si I	45	8681.920		Ne I	23	8819.48	P	Fe I	1269
8559.98		Fe I	1321	8682.99		Ti I	68	8820.45		O I	37
8562.13	P	Fe I	1153	8683.38		N I	1	8821.14		Ti I	139
8564.71		As I	3	8686.13		N I	1	8821.76		As I	3
8565.45		Ti I	141	8686.28		Cl I	14	8824.227		Fe I	60
8567.74		N I	8	8686.77	P	Fe I	1269	8828.08	P	Fe I	1269
8567.78	P	Fe I	1269	8686.79	P	Fe I	956	8828.91		Al I	15
8569.72		Ti I	209	8688.633		Fe I	60	8834.04	P	Fe I	1050
8571.84	P	Fe I	1272	8689.71	P	Fe I	507	8835.67		Cr I	142
8575.25		Cl I	2	8689.83	P	Fe I	1330	8835.85		Y II	30
8576.46	P	Si I	87	8692.34		Ti I	68	8838.433		Fe I	339
8576.50	P	Fe I	1215	8693.24		S I	6	8841.26		Al I	15
8578.40		Ti I	141	8693.98		S I	6	8846.82		Fe I	1267
8579.15		Si I	56	8694.70		S I	6	8848.25	P	Fe I	1153
8581.88		Hf II	66	8698.71	P	Fe I	400	8848.46	P	Fe I	1214
8582.267		Fe I	401	8699.13		Mn I	49	8852.30	P	Fe I	1318
8584.82	P	Fe I	1270	8699.43		Fe I	1267	8853.867		Ne I	27
8585.60		S I		8700.34	P	Fe I	1266	8858.39		Al II	115
8585.96		Cl I	2	8701.05		Mn I	49	8858.77		Al II	115
8586.20	P	Ni I	296	8702.49		Ni I	83	8862.59		Ni I	214
8589.78		Co I	193	8703.24		N I	1	8862.787		H	9
8591.2584		Ne I	30	8703.76		Mn I	49	8863.64		Fe I	1283
8592.10	P	Fe I	1269	8704.15		Ne I	23	8865.759		Ne I	8
8592.97		Fe I	1267	8707.42		Cr I	56	8866.961		Fe I	1172
8594.01		N I	8	8707.95		Cr I	296	8868.42		Fe I	400
8596.02	P	Si I	80	8710.29		Fe I	1267	8869.69		As I	4
8597.00		Si I	80	8710.82		Ba II	5	8874.53		S I	21
8598.18		Ti I	236	8711.69		N I	1	8876.13		Fe I	1267
8598.394		H	9	8713.19		Fe I	400,1267	8877.07		Ni I	285
8598.79		Fe I	1153	8718.70		Cr I	296	8878.26	P	Fe I	401
8600.98		Ti I	141,209	8718.82		N I	1	8878.76	P	Fe I	1050
8606.43		Si I	55	8719.56		Ti I	140	8880.70		S I	21
8606.45		Ni I	275	8725.76		Ti I	139	8882.47		S I	21
8607.08	P	Fe I	1272	8727.10	P	Fe I	999	8883.84		Si I	54
8610.62	P	Fe I	1153	8728.38		Si I	79	8884.23		S I	21
8611.807		Fe I	339	8728.88		N I	1	8887.10	P	Fe I	1265
8612.91		Ti I	141	8729.02		Si I	79	8892.13	P	Fe I	1302
8613.93	P	Fe I	1272	8729.12	P	Fe I	713	8892.97		Si I	54
8616.27	P	Fe I	1266	8732.17		Cr I	296	8896.00	P	Fe I	1153
8618.44		Ti I	209	8734.60		Mn I	49	8898.97		Si I	79,86
8621.612		Fe I	401	8734.70		Ti I	68	8899.50		Si I	79
8629.24		N I	8	8736.0	P	Mg I	39	8901.0		Mn I	56
8632.42	P	Fe I	1050	8737.32		Mn I	49	8902.94	P	Fe I	1266
8634.6480		Ne I	23	8737.74		Ba II	5	8905.99	P	Fe I	1302
8636.26		Cr I	56	8740.93		Mn I	49	8912.88		Al I	14
8637.04		Ni I	186	8742.60		Si I	44	8912.88		Cl I	13
8640.70		Al II	4	8747.32		Fe I	401	8916.26		Fe I	32
8641.47		Ti I		8747.35		N I	1	8918.88		Se I	1
8643.03		Cr I	56	8750.13		Co I	203	8919.50		Ne I	27
8643.29	P	Fe I	1261	8750.475		H	9	8919.95		Fe I	1301
8647.05		Ne I	33	8751.18	P	Si I	44	8920.02	P	Fe I	1261
8648.89		Si I		8752.17		Si I	43	8922.66	P	Fe I	1298
8649.6		Na I	19	8757.192		Fe I	339	8923.56		Al I	14
8652.50	P	Fe I	1050	8761.44		Ti I	139	8923.8		Mg I	25
8654.16		As I	3	8764.000		Fe I	1172	8925.55		Si I	54
8654.3835		Ne I	33	8766.64		Ti I	68	8925.75		Cr I	142
8654.40	P	Fe I	623	8766.68		Si I	54	8926.06		Mn I	56
8654.51		Ne I	33	8767.65	P	Fe I	814	8929.04		Fe I	1301
8654.63		Mn I	59	8770.68		Ni I	82	8929.72		Mn I	56
8655.88		N I	8	8771.70		Ne I	38	8931.78	P	Fe I	507
8656.67	P	Fe I	1269	8772.88		Al I	9	8943.00		Fe I	338
8659.38		Mn I	59	8773.56		Cr I	296	8943.50		Cs I	1
8661.908		Fe I	60	8773.91		Al I	9	8943.6		Na I	26
8662.140		Ca II	2	8778.66		Ti I	140	8945.204		Fe I	1301
8663.73	P	Fe I	1270	8779.12	P	Fe I	1050	8946.25		Fe I	338
8665.021		H	9	8780.6223		Ne I	27	8947.20		Cr I	142
8667.37	P	Fe I	166	8783.755		Ne I	38	8948.01		Cl I	1
8667.40	P	Si I	55	8784.44		Fe I	1270	8949.33		Si I	54
8667.9430		A I	6	8786.28	P	Cr I	142	8950.20	P	Fe I	1050
8670.19		S I	6	8786.96		Cr I	296	8954.65		Ni I	200
8670.65		S I	6	8790.62		Fe I	1267	8956.26	P	Fe I	1266
8670.92		Mn I	49	8790.88		Si I	79	8959.88	P	Fe I	1320
8671.06		Al II	112	8791.28		Si I	79	8965.94		Ni I	225
8671.28		Al II	112	8793.376		Fe I	1172	8967.53	P	Fe I	1286
8671.37		S I	6	8796		Na I	27	8968.20		Ni I	284
8671.86	P	Fe I	1272	8796.42		Fe I	1266	8975.408		Fe I	400
8672.06		Mn I	49	8798.05	P	Fe I	1286	8976.88		Cr I	142
8673.97		Mn I	49	8801.78	P	Fe I	956	8978.04	P	Fe I	1266
8674.751		Fe I	339	8804.624		Fe I	106	8978.17	P	Fe I	713
8674.92		Al II	112	8805.21	P	Fe I	1265	8979.34	P	Ti II	100
8675.28		Al II	112	8806.7032		Mg I	7	8982.35		Ni I	213
8675.38		Ti I	68	8806.7358		Mg I	7	8984.87		Fe I	1301
8679.00		S I	6	8806.7678		Mg I	7	8988.58		Ne I	8
8679.491		Ne I	37	8808.17	P	Fe I	1267	8989.44		Ti I	138
8679.61	P	Fe I	1286	8809.47		Ni I	200	8994.57	P	Fe I	622
8679.70		S I	6	8814.50	P	Fe I	1330	8999.561		Fe I	339
8680.24		N I	1	8816.86	P	Fe I	1271	9002.00		Sc I	1
8680.31		Al II	112	8819.11		Co I	203	9006.72		Fe I	1261
8680.47		S I	6	8819.39		Ti I	68	9008.37		Fe I	1329

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
9009.04		Si I	91	9214.85	P	Fe II	71	9413.46		S I	18
9009.95		Cr I	187	9217.4	P	Mg II	1	9413.59		Si I	14
9010.55		Fe I	202	9217.54		Fe I	1298	9414.14		Fe I	1298
9012.098		Fe I	1301	9220.05		Ne I	33	9415.04	P	Fe I	1297
9013.90		Fe I	106	9221.59		Ne I	33	9415.5		Mg I	38
9014.911		H	9	9224.498		A I	8	9421.82		Si I	72
9015.16		Zr I	39	9225.55		Fe I	1213	9421.93		S I	18
9017.10		Cr I	187	9226.67		Ne I	30	9423.07	P	Fe I	1300
9019.84		Fe I	1301	9228.11		S I	1	9425.38		Ne I	36
9021.69		Cr I	187	9229.017		H	8	9429.58		Mn I	57
9024.47		Fe I	1265	9233.15	P	Fe I	1342	9430.08		Fe I	
9024.78	P	Fe I	1297	9237.49		S I	1	9433.29	P	Fe I	1292
9027.32		Ti I	138	9238.60		Si I	66	9437.11		S I	18
9027.90	P	Ti II	100	9242.32		Fe I	1262	9437.91		Fe I	1171
9028.9		N I	15	9243.29		Mn I	46	9443.98		Fe I	1298
9030.67		Fe I	338	9243.4	P	Mg II	1	9444.36		Cr I	29
9035.86		Cr I	142	9246.54		Fe I	203	9447.00		Cr I	29
9035.92		S I	13	9248.13	P	Fe I	1338	9452.06		Cl I	13
9036.32		S I	13	9248.80	P	Fe I	1285	9452.45		Fe I	1263,1292
9036.73		S I	13	9249.41		Al II	117	9454.24		Fe I	1298
9036.74	P	Fe I	1269	9252.67	P	Ti II	100	9459.21		Ne I	38
9038.65		Sc I	1	9253.72	P	Fe I	1261	9460.66	P	N I	7
9038.72		S I	13	9254.59		Si I		9462.97		Fe I	1263
9038.84	P	Fe I	400	9256.0		Mg I	27	9463.57		He I	67
9039.27		S I	13	9258.30		Fe I	1172	9466.0		Na I	24
9045.40		Cl I	13	9259.05		Fe I	1263	9476.57		Mn I	57
9052.56	P	Fe I	1342	9260.88		O I	8	9482.82	P	Fe I	1319
9059.74		Cr I	165	9262.73		O I	8	9485.93	P	Fe I	622
9060.6		N I	15	9263.97		Cr I	165	9486.680		Ne I	8
9061.33	P	Fe II	71	9265.99		O I	8	9486.89		Cl I	1
9061.48		C I	3	9267.29		As I	3	9487.49		O I	47
9062.24		Fe I	1301	9276.89		Zr I	39	9498.04		O I	47
9062.53		C I	3	9286.578		Al II	64	9499.39		O I	46
9063.40		He I	77	9286.794		Al II	64	9502.12		Mn I	58
9064.06		Si I	91	9288.145		Al II	64	9505.28		Si I	72
9070.42		Fe I	1076,1300	9288.550		Al II	64	9505.67		O I	46
9073.15		Cl I	12	9288.82		Cl I	11	9506.04		Ti I	312
9078.32		C I	3	9289.39	P	Fe I	1298	9508.49		Ti I	312
9079.599		Be I	1172	9290.44		Cr I	29	9510.81		Ti I	312
9080.48		Fe I	1265,1298	9290.649		Al II	64	9511.55		Ti I	312
9084.20	P	Fe I	1076	9290.747		Al II	64	9511.80		Ti I	312
9084.29		Mn I	46	9294.17		Cr I	29	9513.24		Fe I	1298
9088.326		Fe I	339	9294.66		Fe I	1301	9516.51		He I	76
9088.57		C I	3	9297.14	P	Fe I	1247	9516.66		He I	76
9089.413		Fe I	400	9298.05	P	Fe I	1262	9520.06		Ni I	224
9090.70		Ti I	138	9300.62		As I	5	9522.01		O I	45
9094.89		C I	3	9300.85		Ne I	33	9525.78		P I	3
9100.50		Fe I	1264	9304.88		P I	3	9526.17		He I	82
9103.37		Si I	66	9307.94		Fe I	1297	9527.73	P	Fe I	1297
9103.64		Fe I	1076	9313.55		Cr I	80	9529.27		He I	86
9106.40		Ni I	289	9313.98		Ne I	33	9529.31		Fe I	
9111.85		C I	3	9318.13		Fe I	1263	9531.22	P	Fe I	1292
9112.25	P	Fe I	1297	9318.24		Si I	66	9534.17		Ne I	38
9112.95	P	Fe II	71	9324.07		Fe I	1300	9535.72		Mn I	57
9114.02		Mn I	46	9326.52		Ne I	36	9543.376		D	2
9116.89	P	Fe I	1265	9328.64	P	Fe I	1261	9545.974		H	8
9117.10		Fe I	338	9331.546		Al II	56	9546.07		Ti I	32
9118.888		Fe I	338	9331.979		Al II	56	9547.26		Zr I	39
9121.10		Cl I	1	9333.94		Fe I	1297	9547.40		Ne I	38
9122.9660		A I	1	9335.27	P	Fe I	1338	9550.90		Fe I	1263
9124.27		Al II	108	9336.47		Mn I	58	9556.56		Fe I	622
9140.15	P	Fe I	622	9343.40		Fe I	1300	9563.45		P I	2
9146.11		Fe I	202	9344.93		He II	6	9568.58		Cr I	29
9147.800		Fe I	1301	9346.69		La II	152	9569.960		Fe I	1296
9148.45		Cr I	165	9350.46		Fe I	1171	9570.08		Si I	42,65
9148.68		Ne I	30	9354.218		A I	8	9571.76		Cr I	29
9154.7		Na I	25	9359.420		Fe I	203	9573.65	P	Fe I	1297
9155.67	P	Fe I	1301	9362.06		Cr I	80	9574.25		Cr I	29
9156.02		O I	41	9362.370		Fe I	106	9582.28		V I	106
9156.23	P	Fe I	400	9370.57	P	Fe I	338	9584.77		Cl I	1
9157.07	P	Fe I	1268	9372.900		Fe I	202	9585.72		Si I	7
9157.08	P	Fe I	1261	9373.28		Ne I	33	9592.20		Cl I	11
9164.51		Fe I	1263	9375.14	P	Fe I	400	9593.54		P I	2
9172.09		Mn I	46	9382.93	P	Fe I	1284	9595.60		K I	10
9173.20	P	Fe I	203	9383.40	P	Fe I	1285	9597.76		K I	10
9173.63	P	Fe I	1300	9385.62		Ni I	225	9597.94		As I	3
9173.83		Fe I	622	9386.79		N I	7	9599.53		Ti I	32
9175.85		P I	3	9388.28		Fe I	1263	9602.07		Fe I	1283
9178.57		Fe I	1262	9392.77	P	Fe I	1262	9603.09		C I	2
9191.67		Cl I	1	9392.80		N I	7	9603.50		He I	71
9197.49		Cl I	14	9393.40		Si I	72	9608.56		Mn I	60
9199.52		Fe I	1298	9393.81		Cl I	1	9608.89	P	Fe I	1285
9201.76		Ne I	30	9394.71		Fe I	1264	9608.97		P I	2
9203.10	P	Fe I	1298	9396.57		Ni I		9611.60		V I	106
9208.29		Cr I	165	9401.09		Fe I	1297	9614.68		V I	106
9208.55		Si I	66	9403.36	P	Fe II	71	9620.86		C I	2
9210.030		Fe I	338	9404.80	P	Fe I	1264	9620.93	P	Fe I	737
9210.28		He I	83	9405.77		C I	9	9625.72		Ge I	7
9212.91		S I	1	9409.55	P	Fe I	1296	9625.80		He I	90
9214.45		Fe I	1264							Cr I	80

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
9626.562		Fe I	1296	9790.08		P I	4	10061.29		Ni I	284
9632.37		Cl I	12	9796.79		P I	2	10065.080		Fe I	1247
9633.0	P	Mg II	15	9800.335		Fe I	1296	10066.47		Ti I	193
9633.02		Mn I	58	9800.79	P	Fe I	1292	10067.84		Si I	64
9633.78		S I	17	9811.36		Fe I	1285	10070.58	P	Fe I	1345
9634.22		Fe I	1296	9820.24	P	Fe I	106	10072.10		He I	80
9636.69		Fe I	1212	9821.8		N I	19	10076.29		Al II	6
9637.55		Fe I		9822.30		Zr I	39	10077.32		Al II	6
9638.28		Ti I	32	9826.69		As I	3	10077.53		Al II	6
9639.40	P	Ca I	55	9832.15		Ti I	149	10080.32		Cr I	226
9647.40		Ti I	32	9833.76		As I	2	10080.44	P	Fe I	1293
9649.94		S I	17	9834.04		Fe I	1294	10081.40	P	Fe I	106
9653.143		Fe I	1247	9839.38		Fe I	1211	10084.22		P I	4
9657.00		La II	60	9839.58		Si I	65	10084.42	P	Fe I	1209
9657.30		Fe I	1296	9856.7	P	Ca II	12	10084.70		Zr I	39
9657.7841		A I	3	9861.793		Fe I	1296	10086.27	P	Fe I	399
9658.49		C I	2	9862.5		N I	19	10091.12		Te I	1
9658.94		Fe I	1292	9865.44		V I	76	10091.64		Cl I	10
9661.42		Ti I	194	9868.09		Fe I	1292,1299	10107.19		Al II	6
9663.58	P	Ca I	55	9875.95		Cl I	11	10108.01		Al II	6
9664.29	P	Ca I	55	9878.18	P	Fe I	1293	10108.37		Al II	6
9665.426		Ne I	8	9879.41		Ti I	149	10113.4		N I	18
9666.59		Fe I		9881.51	P	Fe I	1209	10113.86		Fe I	264
9667.20		Cr I	29	9886.92		Si I	85	10117.81	P	Fe I	1295
9668.9		V I	106	9889.082		Fe I	1296	10119.20		Ti I	315
9670.48		Cr I	29	9891.90		Si I	71	10120.90		Ti I	193
9672.34		S I	17	9898.90		Ni I	243	10122.50		Al II	6
9673.16		Fe I	580	9900.87		Cr I	80	10123.61		He II	2
9675.55		Ti I	32	9903.74		P I	4	10137.06	P	Fe I	1294
9676.25	P	Ca I	55	9913.16		Si I	65	10138.50		He I	89
9676.42		Fe I	1345	9913.19	P	Fe I	1292	10142.82		Fe I	1294
9676.50		Mn I	60	9917.93		Fe I	1317	10143.59	P	Fe I	979
9677.41		O I	58	9920.46	P	Fe I	1292	10145.00	P	Fe I	621
9680.80		S I	17	9923.03		As I	2	10145.37		Ni I	243
9683.57		Fe I	1337	9924.35	P	Fe I	737	10145.48		Ti I	
9684.9		Mn I	60	9927.35		Ti I	149	10145.601		Fe I	1247
9686.3		Mn I		9932.26		S I	16	10147.09		Ti I	315
9688.60	P	Ca I	55	9933.3	P	Ca II	12	10147.3		N I	18
9688.86		Ti I	32	9937.10	P	Fe I	1210	10149.09	P	Fe I	1294
9689.35		Ni I	295	9941.33		Ti I	193	10153.13	P	Si I	40
9689.41		Si I	65	9944.13		Fe I	1285	10153.30	P	Fe I	1348
9690.62		Ti I	194	9948.98		Ti I	193	10155.18	P	Fe I	59
9691.58		V I	106	9949.06		Cr I	226	10155.88		Si I	64
9693.68		S I	20	9949.84		S I	16	10156.50	P	Fe I	1209
9693.69		Fe I	1292	9950.5		K I	8	10164.5		N I	18
9697.33		S I	17	9950.70	P	Fe I	1209	10167.4		Fe I	59
9699.70		Fe I	1292,1299	9951.15	P	Fe I	1346	10170.60		Ti I	95
9701.81	P	Ca I	55	9953.45	P	Fe I	1346	10179.92		Ti I	315
9702.35		Cl I	1	9955.2		K I	8	10189.26		Ti I	95
9702.66		He I	75	9955.85	P	Fe I	1211	10191.51	P	Fe I	149
9702.86		Ti I	248	9958.90		S I		10193.25		Ni I	213
9705.64		Ti I	32	9959.18	P	Fe I	998	10193.66		V I	76
9710.21	P	Ni I	285	9961.0		Na I	23	10195.11		Fe I	264
9717.00		Ti I	248	9967.32	P	Fe I	1293	10197.05		Cr I	80
9718.96		Ti I	124	9967.46		Si I	64	10203.45		V I	76
9722.88		Te I	1	9970.26	P	Fe I	461	10204.72		P I	4
9728.36		Ti I	32	9976.65		P I	2	10216.351		Fe I	1247
9730.32		Cr I	226	9977.52		Fe I	1293	10218.36		Fe I	461
9734.52		Cr I	29	9980.55		Fe I	1295	10262.49	P	Si I	63
9734.74		P I	2	9981.16		Ti I		10265.23	P	Fe I	59
9738.50		V I	106	9987.0		Mg I	36	10283.87	P	Fe I	1346
9738.60		Si I		9987.88	P	Fe I	59	10288.83		Si I	6
9738.624		Fe I	1296	9993.7		Mg I	36	10295.05		Ni I	
9739.74		S I	20	9997.94		Ti I	149	10302.61		Ni I	242
9741.49		O I	57	10001.35	P	Si I	64	10307.48	P	Fe I	1208
9741.93		S I	20	10003.02		Ti I	193	10307.60		Se I	2
9742.28		Hf II	66	10011.72		Ti I	193	10311.18		He I	74
9743.60		Ti I	32	10012.15	P	Fe I	1336	10311.37		He I	74
9744.33		Cl I	10	10015.33		Si I		10311.88	P	Fe I	106
9746.86		Ti I	248	10016.67	P	Fe I	1293	10321.10		Ni I	289
9747.24		Fe I	1209	10019.77	P	Fe I	1348	10327.30		Se I	2
9750.73		P I	2	10020.16		Si I	41	10327.314		Sr II	2
9752.84		Cr I	80	10022.34	P	Fe I	1345	10330.23		Ni I	224
9753.129		Fe I	1247	10023.98		As I	2	10332.33	P	Fe I	858
9758.08		Si I	65	10025.80	P	Si I	64	10333.24	P	Fe I	1208
9760.65		O I	56	10026.10	P	Fe I	1211	10340.77		Fe I	59
9763.450		Fe I	1296	10027.73		He I	81	10343.85		Ca I	43
9763.913		Fe I	1292	10031.16		He I	85	10348.16		Fe I	1347
9764.40	P	Fe I	1348	10032.84	P	Fe I	1348	10353.85	P	Fe I	1346
9768.27		Si I	7	10034.45		Ti I	95	10362.73	P	Fe I	1345
9770.10		Si I		10036.658		Sr II	2	10364.13	P	Fe I	1347
9770.28		Ti I	32	10046.64		D	2	10371.23		Si I	6
9771.06	P	Fe I	1211	10048.60		Ni I	242	10378.62		Ni I	224
9783.30		Ti I	32	10048.78		Ti I	95	10379.01	P	Fe I	59
9783.59		Ti I	32	10049.38		H	8	10386.45		Se I	2
9783.98		Fe I	1295	10051.55		Te I	1	10388.73	P	Fe I	1346
9784.5010		A I	8	10057.64		Fe I	1294	10392.45		Cl I	10
9786.62		Fe I	1171	10057.69		Ti I	193	10395.75		Fe I	59
9787.67		Ti I	32	10058.28	P	Fe I	59	10396.85		Ti I	31
9789.24		Si I	65	10059.87		Ti I	95	10401.72	P	Fe I	461

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
10405.05		Ge I	7	10838.77		Ca I	56	11564.8		N I	12
10422.99		Fe I	264	10844.02		Si I	31	11588.73	P	Ni I	242
10423.65		Fe I	461	10844.54		Ne I	26	11591.98		Si I	90
10435.38	P	Fe I	1246	10847.72		Ti I	31	11593.55		Fe I	58
10452.70		Fe I	955	10849.68		Fe I	1352	11602.94	P	C I	25
10455.47		S I	3	10861.51		Ca I	56	11607.42		Si I	82
10456.79		S I	3	10863.60		Fe I	1246	11607.57		Fe I	58
10459.46		S I	3	10863.72		Ca I	56	11609.41		Ti I	
10460.07		Ti I	223	10869.37		Ca I	56	11609.91	P	°C I	25
10469.59		Fe I	979	10869.54		Si I	13	11611.49		Si I	90
10470.051		A I	6	10872.47	P	Al I	12	11619.0		C I	25
10486.24		Cr I	118	10875.00	P	Fe I	1316	11626.40		He II	6
10496.14		Ti I	31	10879.78		Ca I	56	11628.0		N I	12
10506.5		N I	28	10881.65		Fe I	336	11631.59	P	C I	25
10509.96		Cr I	118	10882.66		Si I	53	11638.25		Fe I	58
10511.45		P I	1	10884.30		Fe I	979	11638.60	P	C I	25
10529.45		P I	1	10885.16		Si I	77	11640.58		Si I	90
10530.53		Ni I	224	10890.13	P	Fe I	1341	11656.0		C I	29
10532.21		Fe I	979	10891.21	P	Al I	12	11656.0		N I	12
10539.0		N I	28	10891.25		Ni I	224	11667.1		C I	25,29
10548.0		C I	20	10893.72	P	Si I	78	11676.99	P	C I	25
10548.0		N I	28	10896.10		Ti I	310	11689.76		K I	6
10553.02		Ti I	223	10896.30		Fe I	461	11689.98		Fe I	58
10555.63	P	Fe I	1345	10912.92		He I	79	11747.5		C I	24
10562.43		Ne I	40	10914.2	P	Mg II	3	11754.0		C I	24
10565.97		Ti I	223	10914.877		Sr II	2	11769.41		K I	6
10577.14	P	Fe I	579	10916.98		He I	84	11772.66		K I	6
10581.52		P I	1	10925.80		Fe I	1350	11783.28		Fe I	337
10582.66		Si I	84	10929.90		Cr I	118	11801.8		C I	24
10584.66		Ti I	31	10935.11		D	2	11828.8		Mg I	6
10585.12		Si I	6	10938.09		H	8	11836.4	P	Ca II	5
10596.92		P I	1	10947.51		Ge I	6	11849.3		C I	23
10603.38		Si I	5	10949.4	P	Mg II	3	11863.0		C I	23
10607.78		Ti I	31	10957.19		Cr I	118	11880.4		C I	23
10616.75	P	Fe I	579	10961.2	P	Mg I	35	11882.80		Fe I	58
10627.81		Si I	32	10966.1	P	Mg I	35	11884.12		Fe I	58
10647.66		Cr I	118	10979.27		Si I	5	11890.44	P	Si I	12
10653.6		C I	8	10979.87		Ni I	242	11894.9		C I	23
10660.98		Si I	5	10982.28		Si I	77	11905.83		Cr I	221
10661.61		Ti I	31	10984.24		Si I	77	11927.89	P	Ni I	242
10667.53		Cr I	118	10987.22	P	Fe I	337	11947.0	P	Ca II	5
10667.60		He I	73	10996.55		He I	78	11969.07		He I	72
10672.17		Cr I	118	11012.97		He I	70	11973.01		Fe I	58
10673.55		A I	10	11013.27		Fe I	1246	11984.20		Si I	4
10677.04		Ti I	31	11015.63		Cr I	221	11991.57		Si I	4
10681.43		P I	1	11018.00		Si I	39	11997.9		N I	37
10683.18		C I	1	11022.3		K I	9	12031.49		Si I	4
10685.44		C I	1	11044.64		Cr I	118	12074.1		N I	37
10689.52		Si I	53	11044.95		He I	88	12083.79	P	Mg I	26
10691.36		C I	1	11119.80		Fe I	337	12103.46		Si I	4
10694.14		Si I	53	11125.28		Ge I	6	12107.4		N I	37
10707.44		C I	1	11130.37		Si I	77	12128.6		N I	27
10725.19	P	Fe I	858	11149.34		Fe I	336	12186.9		N I	27,34
10726.33		Ti I	31	11157.03		Cr I	221	12203.4		N I	27
10727.21		Si I	53	11187.74		Si I	76	12232.9		N I	27
10729.59		C I	1	11196.70	P	Ni I	81	12270.50		Si I	4
10732.89		Ti I	31	11202.02		Si I	76	12288.0		N I	27,34
10734.14		Ge I	6	11225.83		He I	87	12327.7		N I	34
10745.9		Na I	18	11227.5		N I	17	12395.97	P	Si I	4
10748.7		Na I	18	11230.91		Ti I		12434.3		K I	5
10749.40		Si I	5	11251.09		Fe I	337	12461.2		N I	36
10752.99		Fe I	1352	11253.81	P	Al I	8	12467.8		N I	36
10754.09	P	C I	1	11255.69	P	Al I	8	12521.0		C I	28
10762.24		Ni I	242	11290.01		Si I	76	12523.0		K I	5
10768.39	P	Al I	13	11294.0		N I	17	12551.0		C I	30
10774.92		Ti I	31	11294.97		O I	7	12565.0		C I	30
10780.71	P	Fe I	579	11297.54		O I	7	12582.3		C I	30
10782.12	P	Al I	13	11298.83		Fe I	337	12582.3		N I	36
10783.09		Fe I	461	11302.22		O I	7	12602.6		C I	30
10784.33		Si I	53	11308.45		Si I	76	12614.8		C I	30
10786.78	P	Al I	13	11313.8		N I	17	12679.0		Na I	21
10786.86		Si I	5	11329.0		N I	17	12814.56		D	2
10792.59	P	Ti I	31	11330.36		C I	19	12816.06	P	Ca I	52
10793.65		Ti I	310	11355.97		Fe I	858	12818.05		H	8
10796.52		Si I	78	11374.02		Fe I	58	12823.89	P	Ca I	52
10798.12		Ne I	22	11381.21		Na I	3	12827.09	P	Ca I	52
10801.37		Cr I	118	11381.53		Ti I		13123.37	P	Al I	4
10812.8		Mg I	37	11403.55		Na I	3	13150.68	P	Al I	4
10813.03		P I	1	11403.89		Ti I		13164.1		C I	27
10816.91		Cr I	118	11422.30		Fe I	58				
10818.36		Fe I	979	11439.06		Fe I	337				
10820.31		Ti I	310	11453		S I	19				
10821.62		Cr I	118	11464		S I	19				
10827.09		Si I	5	11468.54		Si I	76				
10828.04		Ti I	31	11472		S I	19				
10829.081		He I	1	11479.87	P	Fe I	1315				
10830.250		He I	1	11485.68		Si I	83				
10830.341		He I	1	11502.94		Si I	90				
10833.12		Ca I	56	11539.50		Ti I					
10834.4		Na I	22	11542.96	P	Fe I	1341				

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
2972?	Ne V	2 F	3298.61	Cr II	5 F	3492.5	Co VII	3 F
2972.3	O I	2 F	3299.6	Ni VII	1 F	3493.55	Fe I	10 F
2990.4	Ni VII	1 F	3299.8	Co VI	1 F	3494.7	Fe VI	4 F
3000.6	Ni VII	3 F	3300.5	Fe III	6 F	3500.4	Mg VI	1 F
3005.1	A III	2 F	3301.6	Fe III	6 F	3501.62	Fe II	26 F
3008.4	Ti III	5 F	3307.0	Co VI	2 F	3503.0	Mg VI	1 F
3026.4	Ni VIII	4 F	3316.1	Fe III	7 F	3503.5	Fe V	4 F
3035.3	Ni VIII	3 F	3318.38	Fe II	27 F	3503.8	Ni VII	1 F
3038.3	Ni VII	1 F	3319.2	Fe III	6 F	3504.02	Fe II	26 F
3038.4	Ni VII	3 F	3319.3	Na IV	1 F	3504.51	Fe II	26 F
3042.44	Mn II	4 F	3322.54	Fe III	5 F	3505.81	Fe II	25 F
3042.61	Mn II	4 F	3326.9	Co VI	2 F	3509.78	Fe I	10 F
3044.52	Mn II	4 F	3329.3	Ca XII	1 F	3511.6	Fe VI	4 F
3048.8	Ni VII	3 F	3333.8	Fe III	6 F	3511.64	Fe I	10 F
3049.05	Mn II	4 F	3334.9	Fe III	6 F	3512.9	Co VI	1 F
3063.0	N II	2 F	3336.9	Co VI	2 F	3516.17	Fe I	10 F
3066.29	Cr II	8 F	3337.7	Ti III	4 F	3522.76	Fe I	10 F
3068.8	Al VII	1 F	3337.77	Cr II	5 F	3524.38	Fe II	26 F
3070.8	N II	2 F	3337.82	Mn II	3 F	3527.33	Fe I	10 F
3071.0	Co VII	4 F	3338.5	Co VII	3 F	3528.28	Fe II	25 F
3074.0	Al VII	1 F	3339.14	Fe II	27 F	3532.2	F IV	2 F
3074.11	Ni II	6 F	3340.7	Fe III	6 F	3536.25	Fe II	26 F
3075.6	Ni VIII	3 F	3341.38	Mn II	3 F	3538.69	Fe II	26 F
3081.6	Ni VII	3 F	3341.5	Co VI	1 F	3538.8	Co VI	1 F
3089.76	Cr II	8 F	3342.7	Cl III	2 F	3539.19	Fe II	26 F
3093.4	Al VII	1 F	3342.9	Ne III	2 F	3543.5	Fe VI	5 F
3098.6	Co VII	4 F	3344.72	Mn II	3 F	3558.1	Fe VI	4 F
3098.7	Al VII	1 F	3345.9 N	Ne V	1 F	3559.86	Ni II	5 F
3106.0	Ni VII	1 F	3353.4	Cl III	2 F	3569.0	Fe VI	5 F
3106.1	Ni VII	3 F	3355.5	Fe III	6 F	3575.6	Fe VI	4 F
3109.0	A III	2 F	3356.6	Fe III	6 F	3575.72	Fe II	25 F
3117.1	Ni VII	3 F	3361.7	Co VII	3 F	3579.81	Fe II	25 F
3118.3	Cl IV	2 F	3362.5	Fe V	4 F	3583.2	Cl II	2 F
3124.18	Fe II	12 F	3363.2	Ti III	4 F	3586.8	Co VI	1 F
3159.5	Co VII	4 F	3366.2	Fe III	6 F	3587.2	Fe VII	3 F
3162.21	Fe II	12 F	3367.3	Fe III	6 F	3590.8	Sc VI	2 F
3165.4	Ni VII	3 F	3367.5	Co VI	2 F	3593.3	Ti III	6 F
3168.2	Co VII	3 F	3368.9	Fe V	4 F	3601.3	Ni XVI	1 F
3170.55	Cr II	7 F	3371.4	Fe III	5 F	3608.5	Ti III	6 F
3175.38	Fe II	11 F	3374.6	Fe V	4 F	3615.5	Ti III	9 F
3181.05	Fe II	12 F	3376.20	Fe II	26 F	3616.00	Fe II	25 F
3185.01	Fe II	11 F	3378.4	Ti III	4 F	3622.9	Ti III	6 F
3188.79	Cr II	7 F	3378.55	Ni II	5 F	3627.35	Ni II	5 F
3189.1	Co VII	3 F	3379.7	Ni VII	1 F	3628.65	Fe II	25 F
3190.76	Fe II	12 F	3380.95	Fe II	27 F	3630.3	Fe VI	5 F
3191.2	Ni VII	1 F	3387.10	Fe II	26 F	3631.4	Mn VI	3 F
3191.3	Ni VII	3 F	3387.7	Fe XIII	2 F	3631.8	Ti III	6 F
3202.25	Cr II	6 F	3388.2	Co VI	2 F	3638.4	Ti III	6 F
3203.3	Cl IV	2 F	3396.7	Ni VII	2 F	3640.6	Ti III	6 F
3207.46	Cr II	6 F	3398.5	Co VI	2 F	3643.3	Ni XIII	2 F
3207.6	Ti III	7 F	3400.3	Fe V	4 F	3645.7	Fe VI	4 F
3209.3	Co VII	4 F	3402.50	Fe II	27 F	3646.3	Ca VI	1 F
3209.94	Fe II	12 F	3403.3	Co VI	1 F	3656.3	Ti III	6 F
3212.75	Cr II	6 F	3403.65	Fe I	10 F	3658.1	Co VI	1 F
3214.5	Ni VII	1 F	3405.39	Fe I	10 F	3659.96	Fe II	10 F
3214.5	Ti III	7 F	3406.2	Fe III	5 F	3661.3	Ti III	11 F
3214.67	Fe II	11 F	3406.6	Fe V	4 F	3664.1	Fe VI	4 F
3216.32	Cr II	6 F	3413.3	Ni VII	2 F	3670.62	Fe II	10 F
3224.54	Fe II	11 F	3425.8 N	Ne V	1 F	3672.37	Cr I	4 F
3226.7	Ti III	7 F	3428.24	Fe II	27 F	3675.0	Cl II	2 F
3226.99	Fe II	11 F	3428.8	Fe III	5 F	3675.2	Fe VI	5 F
3228.2	Ni VIII	3 F	3430.3	Fe V	4 F	3678.71	Cr I	4 F
3230.17	Fe II	12 F	3439.29	Ni II	5 F	3680.3	Ni IX	2 F
3236.7	Fe III	7 F	3440.3	Ni VII	1 F	3686	V VIII	1 F
3239.07	Cr II	5 F	3440.99	Fe II	26 F	3688?	Ca VII	2 F
3239.7	Fe III	6 F	3444.1	Co VI	2 F	3695.0	Ni VIII	2 F
3239.8	Co VII	3 F	3445.4	Fe V	4 F	3702.7	Ca VI	1 F
3243.2	Ni VII	1 F	3445.9	Na IV	1 F	3705.8	Ni VIII	2 F
3244.18	Fe II	11 F	3450.39	Fe II	27 F	3708.3	Co VI	1 F
3254.24	Fe II	11 F	3452.30	Fe II	26 F	3709.14	Fe II	10 F
3254.7	Fe III	6 F	3452.54	Fe I	10 F	3712.26	Fe II	10 F
3256.31	Fe II	11 F	3454.34	Fe I	10 F	3721.1	S III	2 F
3256.73	Fe II	11 F	3455.11	Fe II	26 F	3726.16 N	O II	1 F
3261.7	Co VII	3 F	3457.3	Fe VII	3 F	3728.91 N	O II	1 F
3263.1	Ti VII	2 F	3458.73	Fe I	10 F	3733.6	Mn VI	3 F
3264.84	Fe II	11 F	3460.20	Fe II	25 F	3735.2	Fe V	3 F
3272.9	Co VI	2 F	3461.42	Fe II	27 F	3736.17	Fe II	10 F
3273.5	Cr IX	1 F	3463.4	Fe V	4 F	3740.2	Fe VI	5 F
3274.7	Co VII	4 F	3465.7	Co VI	2 F	3744.1	Fe V	3 F
3275.02	Fe II	11 F	3466.4	N I	2 F	3751.66	Fe II	10 F
3277.12	Fe II	11 F	3470.0	Ni IX	2 F	3754.98	Fe I	9 F
3277.3	Co VI	1 F	3476.5	Co VI	2 F	3755.5	Fe V	3 F
3277.55	Fe II	11 F	3481.5	Co VI	1 F	3759.9	Fe VII	3 F
3283.1	Fe III	7 F	3484.01	Fe II	27 F	3761.0	Co VI	1 F
3285.6	Co VI	2 F	3485.5	Mg VI	1 F	3764.8	Fe V	3 F
3286.2	Fe III	6 F	3486.6	Ni VII	2 F	3774.9	Fe VI	3 F
3287.35	Fe II	11 F	3487.23	Fe I	10 F	3776.1	Fe VI	4 F
3289.46	Fe II	11 F	3488.1	Mg VI	1 F	3777.4	Fe V	1 F
3289.89	Fe II	11 F	3489.07	Fe I	10 F	3782.9	Fe V	3 F
3295.4	Co VI	2 F	3489.98	Fe II	26 F	3794.6	Fe V	3 F

FINDING LIST

Forbidden Lines

I A		Element	Multiplet No.	I A		Element	Multiplet No.	I A		Element	Multiplet No.
3796.7		S III	2 F	4055.5		Mn V	4 F	4231.56		Fe II	21 F
3798.2		Fe V	1 F	4059.3		F IV	1 F	4234.81		Fe II	37 F
3806.34		Cu II	2 F	4062.2		Mn V	4 F	4243.98		Fe II	21 F
3810.6		Ni IX	2 F	4065.7		Ni IX	2 F	4244.81		Fe II	21 F
3812.07		Fe I	9 F	4068.62	N	S II	1 F	4249.07		Fe II	36 F
3814.58		Fe I	9 F	4070.7		Fe III	4 F	4249.48		Ni II	4 F
3815.1		Fe VI	3 F	4071.5		Fe V	1 F	4251.99		Cr I	2 F
3820.2		Fe V	3 F	4076.22	N	S II	1 F	4262.7		Co VII	2 F
3834.73		Fe II	9 F	4077.5		Fe V	2 F	4263?		Ti VIII	1 F
3836.89		Fe II	8 F	4079.7		Fe III	4 F	4263.07		Fe I	7 F
3838.1		Fe V	1 F	4080.00		Fe II	24 F	4263.62		Fe I	8 F
3838.9		Fe V	3 F	4083.78		Fe II	23 F	4266.34		Fe II	36 F
3846.46		Fe I	9 F	4084.32		Fe II	24 F	4268.67		Fe II	37 F
3847.78		Fe II	8 F	4086.5		Ca XIII	1 F	4269.60		Fe I	7 F
3849.1		Fe VI	3 F	4093.0		Fe V	2 F	4270.62		Fe II	36 F
3850.3		Ni VIII	2 F	4096.6		Fe III	4 F	4274.87		Mn II	6 F
3850.8		Fe V	3 F	4097?		K VI	2 F	4275.21		Mn II	6 F
3851.63		Fe II	9 F	4099.29		Fe I	8 F	4276.83		Fe II	21 F
3856.98		Fe I	9 F	4103.1		Co VII	2 F	4278.21		Fe I	7 F
3862.3		Ni VIII	2 F	4104.59		Fe I	8 F	4278.97		Mn II	6 F
3866.9		Mn VI	3 F	4106.1		Ni VIII	2 F	4280.04		Fe I	8 F
3868.74	N	Ne III	1 F	4107.51		Fe I	7 F	4285.90		Ni II	4 F
3873.51		Fe I	9 F	4108.02		Fe I	8 F	4287.40		Fe II	7 F
3874.07		Fe II	8 F	4112.7		Ni IX	2 F	4294.70		Ni II	4 F
3882.73		Fe II	24 F	4113.42		Cr I	3 F	4297.8		Ni VIII	1 F
3884.57		Fe I	9 F	4113.7		Mn V	4 F	4298.8		Ni VIII	2 F
3889.58		Fe I	9 F	4114.10		Cr I	3 F	4302.3		Cr V	3 F
3890.9		Fe VI	3 F	4114.48		Fe II	23 F	4305.90		Fe II	21 F
3891.8		Fe V	3 F	4116.36		Cr I	3 F	4308.4		Mn V	4 F
3894.40		Fe II	8 F	4116.60		Ti II	20 F	4310.46		Ni II	10 F
3895.7		Fe V	1 F	4117.09		Cr I	3 F	4314.92		Ni II	10 F
3898.19		Fe I	9 F	4120.7		Mn V	4 F	4319.62		Fe II	21 F
3905.62		Fe II	8 F	4122.6		Mn X	2 F	4321.92		Fe II	37 F
3911.1		Fe V	3 F	4123.9		Fe V	2 F	4326.85		Ni II	3 F
3914.83		Sc III	1 F	4125?		K V	1 F	4329.43		Fe II	36 F
3917.23		Fe I	9 F	4129.4		Fe III	4 F	4331.7		Ni IX	1 F
3917.64		Fe I	9 F	4129.49		Ti II	20 F	4331.9		Mn V	3 F
3923.5		Fe V	3 F	4130.47		Fe I	8 F	4346.85		Fe II	21 F
3929.35		Fe II	24 F	4130.7		Fe III	4 F	4347.35		Fe II	36 F
3931.44		Fe II	8 F	4131.51		Fe II	24 F	4351.05		Fe II	36 F
3931.50		Fe I	9 F	4134.01		Fe II	21 F	4351.80		Fe II	36 F
3932.72		Fe II	8 F	4136.4		Fe V	1 F	4352.78		Fe II	21 F
3937.80		Fe II	8 F	4139.5		Co VII	2 F	4356.14		Fe II	22 F
3945.34		Sc III	1 F	4140.4?		Ti III	8 F	4358.10		Fe II	6 F
3945.70		Fe I	9 F	4142.5		Fe V	2 F	4358.37		Fe II	21 F
3946.0		Co VIII	2 F	4143.17		Ni II	10 F	4359?		A XIV	1 F
3949.27		Fe II	8 F	4144.3		Fe III	4 F	4359.34		Fe II	7 F
3967.51	N	Ne III	1 F	4144.8		Ti VII	1 F	4363.21	N	O III	2 F
3968.23		Ti II	11 F	4144.9?		Fe I	7 F	4365.8		Mn V	3 F
3968.27		Fe II	8 F	4146.65		Fe II	21 F	4372.43		Fe II	21 F
3968.66		Fe II	24 F	4147.21		Ti II	20 F	4375.71		Cu II	1 F
3970.1		Fe V	1 F	4147.30		Ni II	10 F	4377.37		Fe I	6 F
3976.2		Fe III	4 F	4149.52		Cr I	2 F	4382.75		Fe II	6 F
3976.97		Fe II	8 F	4153.72		Fe I	8 F	4384.21		Fe II	36 F
3979.78		Fe II	9 F	4156.25		Ti II	20 F	4387.4		Mn IV	2 F
3979.93		Fe II	8 F	4157.5		F II	2 F	4391.1		Mn IV	2 F
3983.08		Ti II	11 F	4157.89		Fe II	37 F	4396.9		Cr V	3 F
3986.1		Fe XI	2 F	4160.9		Ti III	10 F	4398.4		Mn V	3 F
3986.38		Fe II	8 F	4163.6?		Ti III	8 F	4402.60		Fe II	36 F
3991.47		Cr II	4 F	4165.79		Cu II	1 F	4404.4		Ni VIII	1 F
3991.84		Fe II	8 F	4166?		K V	1 F	4405.2		Mn IV	2 F
3992.08		Cr II	4 F	4169.40		Ti II	20 F	4406.39		Fe II	36 F
3993.29		Cr II	4 F	4169.41		Ti II	20 F	4407.16		Fe II	36 F
3993.57		Cr II	4 F	4175.2		Fe V	2 F	4407.9		Cr IX	1 F
3993.65		Ni II	4 F	4177.21		Fe II	21 F	4408.5		Mn IV	2 F
3995.8		Fe VI	3 F	4178.93		Fe I	7 F	4409.86		Fe II	22 F
3996.3		Ca V	2 F	4178.95		Fe II	23 F	4413.78		Fe II	7 F
3996.3		F IV	1 F	4179.45		Fe I	8 F	4414.45		Fe II	6 F
4003.2		Fe V	1 F	4181.3		Fe V	1 F	4416.27		Fe II	6 F
4004.07		Ti II	11 F	4185.74		Fe I	8 F	4422.4		Co VIII	2 F
4005.07		Ti II	11 F	4187.46		Ti II	20 F	4427.7		Mn IV	2 F
4008.3		Fe III	4 F	4190.53		Fe II	37 F	4430.79		Ti I	25 F
4010.91		Fe II	9 F	4190.6		Ni IX	2 F	4432.45		Fe II	6 F
4011.2		Na V	1 F	4196.3		Mn V	4 F	4432.8		Mn V	3 F
4015.3		Na V	1 F	4197.81		Fe II	22 F	4435.08		Fe II	36 F
4017.38		Fe II	24 F	4198.0		Co VIII	2 F	4435.1		Co VII	2 F
4017.5		Na V	1 F	4200.6		Ti III	10 F	4437.10		Fe I	6 F
4020.20		Ti II	11 F	4201.56		Fe I	8 F	4438.92		Fe II	36 F
4021.6		Na V	1 F	4201.74		Ni II	3 F	4439.73		Fe II	36 F
4025.80		Ni II	4 F	4203.39		Fe I	7 F	4442.0		Mn IV	2 F
4026.6		Fe V	1 F	4203.5		Mn V	4 F	4446.2		Ni VIII	1 F
4029.41		Fe II	9 F	4204.9		Co VIII	2 F	4452.11		Fe II	7 F
4031.15		Ti II	11 F	4216.4		Ni VIII	1 F	4454.37		Fe I	21 F
4032.3		Ni VIII	2 F	4217.71		Fe I	7 F	4457.95		Fe II	6 F
4033.56		Ni II	4 F	4225.9		Ni VIII	1 F	4458.57		Fe I	6 F
4033.98		Fe II	24 F	4226.8		Fe V	2 F	4461.0		Co VIII	1 F
4041.57		Ti II	11 F	4229.8		Fe V	1 F	4461.0		Mn IV	2 F
4043.4		Ni IX	1 F	4229.86		Fe I	7 F	4461.54		Ni II	10 F
4046.4		Fe III	4 F	4230.40		Fe I	8 F	4466.33		Ni II	10 F
4052.5		Ni VIII	1 F	4231.4		Ni XII	1 F	4468?		Ti VIII	1 F

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
4470.28	Fe II	6 F	4658.1	Fe III	3 F	4874.21	V II	8 F
4472.37	Ti I	19 F	4662.7	Mn IV	1 F	4874.49	Fe II	20 F
4473.46	Fe I	6 F	4664.45	Fe II	4 F	4876.0	Cr III	3 F
4474.91	Fe II	7 F	4664.87	Fe II	5 F	4877.01	Ti II	10 F
4475.0	Co VII	2 F	4665.5	Co VII	2 F	4880.00	V II	8 F
4477.91	Ti I	15 F	4665.65	Fe II	4 F	4881.0	Fe III	2 F
4478.8	Mn IV	1 F	4667.0	Fe III	3 F	4881.87	Mn II	5 F
4480.6	Mn IV	2 F	4669.5	P II	2 F	4883.9	Fe III	1 F
4484.84	Ti I	19 F	4672.2	Sc VI	1 F	4886.56	Fe I	4 F
4485.87	Ni II	3 F	4674.64	Fe I	21 F	4887.27	Cr II	15 F
4486.35	Ti I	19 F	4677.94	Fe I	21 F	4889.49	Mn II	5 F
4488.75	Fe II	6 F	4680.05	Fe I	5 F	4889.63	Fe II	4 F
4488.76	Ti I	19 F	4685.99	Fe I	21 F	4889.70	Fe II	3 F
4492.3	Co VIII	2 F	4687.56	Fe II	5 F	4893.9	Fe VII	2 F
4492.64	Fe II	6 F	4692.6	Co VII	1 F	4894.1	Cr III	3 F
4493.23	Fe I	5 F	4693.56	Fe I	5 F	4894.8	Cr IV	4 F
4493.3	Ni VIII	1 F	4694.59	Fe I	5 F	4896.65	Mn II	5 F
4494.57	Fe I	6 F	4699.0	Fe VII	2 F	4896.87	V II	8 F
4495.3	Mn IV	2 F	4699.3	Mn IV	1 F	4897.21	V II	8 F
4496.21	Ti I	19 F	4701.5	Fe III	3 F	4898.49	Ti I	13 F
4497.23	Ti I	19 F	4711.4	A IV	1 F	4898.64	V II	8 F
4497.4	Mn IV	1 F	4711.86	Fe I	21 F	4899.4	Cr IV	4 F
4498.90	Ti I	19 F	4714?	Ne IV	1 F	4901.1	Co VII	1 F
4500.00	Ti I	19 F	4715.21	Fe I	21 F	4905.35	Fe II	20 F
4501.36	Ti I	19 F	4716?	Ne IV	1 F	4907.6	Cr IV	5 F
4504.71	Ti I	19 F	4716.36	Fe II	5 F	4908.8	Mn IV	1 F
4505.9	Co VII	1 F	4717?	Ne IV	1 F	4911.9	Cr III	3 F
4506.9	S I	2 F	4719.7	Mn IV	1 F	4912.82	Ca I	1 F
4508.52	Ti I	19 F	4720?	Ne IV	1 F	4916.18	Ca I	1 F
4509.61	Fe II	6 F	4723.39	Fe I	21 F	4916.26	Fe I	4 F
4509.85	Ti I	19 F	4728.07	Fe II	4 F	4916.81	Ti II	23 F
4510.63	Fe I	6 F	4733.9	Fe III	3 F	4917.22	Fe II	3 F
4511.0	K IV	2 F	4734	V VIII	1 F	4923.05	V II	7 F
4514.90	Fe II	6 F	4736.6	P II	2 F	4924.5	Fe III	2 F
4515.52	Ti I	19 F	4738.9	Co VII	1 F	4924.81	Cr II	15 F
4516.60	Fe I	6 F	4740.3	A IV	1 F	4925.84	Ti II	23 F
4517.36	Ti I	19 F	4745.49	Fe II	20 F	4928.68	V II	8 F
4521.76	Ti I	19 F	4750.57	Fe II	5 F	4928.9	Cr III	3 F
4523.16	Ni I	3 F	4751.75	Fe I	4 F	4930.5	Fe III	1 F
4523.6	Cr V	3 F	4754.7	Fe III	3 F	4931.8	O III	1 F
4526.55	Ti I	19 F	4761.9	Mn IV	1 F	4936.4	Fe III	1 F
4528.3	Mn IV	2 F	4769.4	Fe III	3 F	4938.6	Ca VII	1 F
4528.39	Fe II	6 F	4771.54	Ti II	10 F	1940.22	V II	7 F
4528.7	Mn V	3 F	4772.07	Fe II	4 F	1942.3	Fe VII	2 F
4532.09	Fe I	6 F	4772.4	Ni VIII	1 F	1942.95	Fe I	4 F
4533.00	Fe II	6 F	4774.74	Fe II	20 F	4946.76	Ti I	12 F
4535.7	Mn IV	1 F	4777.7	Fe III	3 F	4947.17	Cr II	15 F
4536.05	Ti I	19 F	4779?	Ti VIII	1 F	4947.38	Fe II	20 F
4544.36	Fe I	5 F	4785.21	Ti II	10 F	4950.74	Fe II	20 F
4545?	Ti VIII	1 F	4785.9	Co VIII	1 F	4956.35	Fe I	4 F
4545.20	Fe I	21 F	4789.19	Fe I	4 F	4958.23	Fe II	4 F
4548.3	Be I	1 F	4789.5	F II	1 F	4958.91 N	O III	1 F
4548.32	Fe I	21 F	4793.03	Ti II	10 F	4961.18	Fe I	4 F
4548.5	Mn IV	2 F	4798.28	Fe II	4 F	4965.31	V II	7 F
4550.48	Fe II	6 F	4799.31	Fe II	4 F	4965.6	Cr III	3 F
4550.64	Fe I	6 F	4799.4	Cr IV	5 F	4965.78	Fe II	3 F
4551.98	Fe II	6 F	4799.5	Fe III	3 F	4968.65	V II	7 F
4554.49	Fe I	6 F	4806.83	Ti II	10 F	4968.8	Fe VI	2 F
4555.01	Fe II	6 F	4807.5	Fe VI	2 F	4969.3	Cr IV	5 F
4563.7	Mn IV	2 F	4813.27	Ni I	3 F	4971.8	Cr IV	4 F
4564.7	Co VIII	2 F	4813.9	Fe III	3 F	4973.39	Fe II	20 F
4573.23	Fe I	6 F	4814.0	Cr IV	5 F	4974.0	Fe VI	2 F
4573.45	Ni II	10 F	4814.55	Fe II	20 F	4976.33	V II	7 F
4573.9	Fe III	3 F	4823.3	Mn IV	1 F	4976.5	Cr IV	4 F
4573.93	Cr I	1 F	4823.44	Ti II	10 F	4982.73	Ti II	23 F
4575.46	Ca I	2 F	4824?	Sc VII	1 F	4982.92	Ti I	11 F
4575.84	Cr I	1 F	4824.1	Fe III	3 F	4983.42	Fe I	4 F
4577.32	Cr I	1 F	4835.4	Cr III	3 F	4985.27	V II	7 F
4578.83	Fe I	5 F	4837.42	Ti II	10 F	4985.64	Cr II	15 F
4580.80	Cr II	3 F	4838.7	Cr IV	4 F	4985.9	Fe III	2 F
4580.88	Cr II	3 F	4842.4	Cr III	3 F	4987?	Sc VII	1 F
4581.18	Cr II	3 F	4843.1	Cr IV	4 F	4987.2	Fe III	2 F
4589.0	S I	2 F	4843.34	Fe I	4 F	4987.68	Ti II	19 F
4591.4	Mn IV	1 F	4843.51	Fe II	3 F	4988.75	Ti I	12 F
4598.07	Fe II	4 F	4847.01	Ti I	13 F	4989.4	Fe VII	2 F
4603.66	Fe I	5 F	4847.58	Fe I	4 F	4992.68	Cr II	2 F
4604.48	Fe II	5 F	4850.9	Fe VI	2 F	5002.01	Fe I	4 F
4607.0	Fe III	3 F	4851.6	Co VII	1 F	5002.63	Ti II	19 F
4610?	A V	2 F	4852.73	Fe II	20 F	5002.88	V II	7 F
4618.97	Fe I	21 F	4857.50	V II	8 F	5005.52	Fe II	20 F
4621.5	C I	2 F	4858.4	Co VII	1 F	5006.63	Ti II	19 F
4622.19	Fe I	21 F	4859.87	Cr II	15 F	5006.65	Fe II	4 F
4627.3	C I	2 F	4861.41	Ti II	23 F	5006.84 N	O III	1 F
4630.06	Fe I	21 F	4862.80	Ti II	10 F	5011.3	Fe III	1 F
4631.93	Fe I	5 F	4863.9	Mn IV	1 F	5014.37	Fe I	4 F
4632.27	Fe II	5 F	4869.3	F II	1 F	5020.24	Fe II	20 F
4639.68	Fe II	4 F	4870.8	Cr III	3 F	5021.69	Ti II	19 F
4640.05	Fe I	5 F	4871.43	V II	8 F	5025.53	Ti I	11 F
4644.2	Ni VIII	1 F	4872.80	V II	8 F	5027.34	Ni I	3 F
4652.2	Co VII	1 F	4873.4	Cr IV	5 F	5032.69	Ti II	19 F

FINDING LIST

Forbidden Lines

I A		Element	Multiplet No.	I A		Element	Multiplet No.	I A		Element	Multiplet No.
5032.7		Fe III	2 F	5227.25		V II	6 F	5428.6		Fe VI	1 F
5034.05		Cr II	15 F	5228.44		Cr II	13 F	5431.39		Ni II	9 F
5035.50		Fe II	4 F	5229.06		Zr II	7 F	5432.1		Cr III	2 F
5036.55		Fe II	3 F	5235.07		V II	6 F	5433.15		Fe II	18 F
5039.10		Fe II	19 F	5236.6		Fe VI	1 F	5433.69		Zr III	1 F
5043.30		Ti I	12 F	5237.7		V IV	3 F	5434.30		Zr II	6 F
5043.53		Fe II	20 F	5238.35		Cr II	13 F	5435.6		Cr III	2 F
5045?		Sc VII	1 F	5239.47		Cr I	15 F	5439.72		Fe I	3 F
5047.91		Ti II	19 F	5242.00		Cr II	13 F	5439.9		Fe III	1 F
5049.29		Fe II	20 F	5245.25		V II	6 F	5440.45		Fe II	16 F
5049.73		Cr II	2 F	5247.84		Cr II	13 F	5442.82		Cr II	12 F
5056.5		Ni IX	1 F	5248.64		Cr II	14 F	5446.0		V IV	3 F
5060.3		Fe III	1 F	5254.49		V II	6 F	5449.43		Cr II	12 F
5063.7		Fe III	2 F	5255.97		Cr II	13 F	5453.4		Cr III	2 F
5065.43		Ti II	19 F	5261.61		Fe II	19 F	5460.0		Ca VI	2 F
5071.6		Cr IV	4 F	5268.4		Co VIII	1 F	5466.67		Ti I	9 F
5072.40		Fe II	19 F	5268.82		Fe I	19 F	5470.51		Cr II	12 F
5074.90		Fe I	19 F	5268.88		Fe II	18 F	5471.3		Cr III	2 F
5076.3		Co VII	1 F	5269.16		Ni II	14 F	5472.09		V II	5 F
5076.57		Fe II	20 F	5270.19		Cr II	13 F	5473.37		Mn II	9 F
5080.84		Ti II	19 F	5270.4		Fe III	1 F	5473.94		Mn II	9 F
5082.54		Cr I	16 F	5273.38		Fe II	18 F	5475.59		V II	5 F
5083.72		Fe II	35 F	5274.27		Ni II	9 F	5477.25		Fe II	34 F
5084.8		Fe III	1 F	5275.83		Ni II	14 F	5477.40		Fe I	20 F
5086.52		Fe II	3 F	5276.1		Fe VII	2 F	5478.76		V II	5 F
5092.60		Cr II	2 F	5278.39		Fe II	35 F	5481.17		Fe I	20 F
5092.97		Cr I	8 F	5279.2		Fe VI	1 F	5482.91		V II	5 F
5098.44		Cr I	16 F	5279.80		Cr II	13 F	5483.3		Cr III	2 F
5100.4		Fe VI	1 F	5280.25		Fe II	16 F	5485.7		Fe VI	1 F
5104.5		Ti VII	1 F	5281.46		Ni II	9 F	5493.10		V II	20 F
5105.16		Cr I	8 F	5282.88		V II	6 F	5494.80		Mn II	9 F
5107.95		Fe II	18 F	5283.11		Fe II	35 F	5495.42		Zr II	7 F
5108.53		Cr I	8 F	5285.21		Cr II	13 F	5495.82		Fe II	17 F
5108.57		Cr II	14 F	5285.34		Cr I	15 F	5496.84		V II	5 F
5111.63		Fe II	19 F	5286.31		Ti I	10 F	5504.22		V II	5 F
5116.03	C	Ni XIII	1 F	5288.83		Cr II	12 F	5505.1		Cr III	2 F
5116.3		Ni XIII	1 F	5289.66		Fe I	19 F	5505.25		Cr II	12 F
5118.07		Zr III	1 F	5290.75		Fe I	20 F	5509.51		Ti I	7 F
5119.47		Cr II	2 F	5295.70		Fe II	17 F	5509.63		V II	5 F
5122.88		Zr II	7 F	5296.3		Cr IV	3 F	5517.2		Cl III	1 F
5124.41		Cr I	16 F	5296.84		Fe II	19 F	5517.24		Zr III	1 F
5126.25		Cr I	16 F	5299.42		Cr II	13 F	5518.00		Ti I	9 F
5127.09		Cr II	14 F	5302.86	C	Fe XIV	1 F	5520.18		Zr II	7 F
5134.16		Cr I	15 F	5303.37		Zr III	1 F	5523.28		Fe II	33 F
5136.3		Co VII	1 F	5303.6		Fe XIV	1 F	5523.3		Cr III	2 F
5144.39		Zr II	7 F	5303.99		Fe I	3 F	5527.33		Fe II	17 F
5145.5		Cr IV	3 F	5304.06		Fe I	20 F	5527.61		Fe II	34 F
5145.55		Cr I	15 F	5308.68		Cr II	12 F	5527.92		V II	5 F
5146.8		Fe VI	2 F	5308.9		Ca V	1 F	5528.87		Zr II	6 F
5147.16		Fe I	19 F	5310.36		Ti I	10 F	5530.11		Mn II	9 F
5150.07		Cr I	15 F	5312.52		Ti I	10 F	5530.69		Mn II	9 F
5151.9		Fe III	1 F	5313.88		Cr II	13 F	5532.41		Fe I	20 F
5154.28		Cr I	16 F	5316.97		Zr III	1 F	5534.6		A X	1 F
5157.59		Cr II	14 F	5322.2		Cl IV	3 F	5535.09		Ti I	7 F
5158.00		Fe II	18 F	5323.64		Cr II	13 F	5536.98		Mn II	9 F
5158.3		Fe VII	2 F	5326.5		V IV	3 F	5537.7		Cl III	1 F
5158.81		Fe II	19 F	5331.46		Zr II	7 F	5539.6		Sc VI	1 F
5162.53		Cr I	15 F	5332.4		P I	2 F	5539.74		Zr III	1 F
5163.94		Fe II	35 F	5333.65		Fe II	19 F	5541.7		Mn VI	2 F
5165.98		Cr I	15 F	5334.30		Ti I	10 F	5542.54		Ti I	8 F
5170.84		Fe I	3 F	5336.4		Fe VI	1 F	5543.9		Mn V	2 F
5174.95		Cr II	14 F	5339.65		Cr II	13 F	5545.88		Fe II	33 F
5177.0		Fe VI	2 F	5339.7		P I	2 F	5546.59		Fe II	2 F
5180.78		Fe I	20 F	5341.39		Cr II	12 F	5549.49		V II	5 F
5181.21		Cr I	15 F	5347.67		Fe II	18 F	5550.25		V II	14 F
5181.97		Fe II	18 F	5352.29		Fe I	20 F	5550.3		Cr III	2 F
5182.71		Cr I	16 F	5354.15		Cr II	13 F	5551.31		Fe II	39 F
5184.80		Fe II	19 F	5354.76		Zr II	7 F	5552.93		Cr II	12 F
5185		Co XI	1 F	5355.9		Fe III	1 F	5554.68		V II	20 F
5191.4	N	A III	3 F	5356.32		Fe I	3 F	5555.33		Ti I	7 F
5193.13		Fe I	19 F	5358.79		Ti I	10 F	5556.31		Fe II	18 F
5193.82		Cr I	15 F	5362.06		Fe II	17 F	5557.14		Cr II	12 F
5194.19		Fe I	20 F	5363.91		Fe I	20 F	5561.21		Mn II	9 F
5197.31		Cr I	15 F	5368.91		Cr II	13 F	5561.66		Ti I	7 F
5198.5		N I	1 F	5370.5		Fe VI	2 F	5562.94		Ti I	8 F
5199.18		Fe II	35 F	5374.6		Mn VI	2 F	5565.68		Fe I	3 F
5200.7		N I	1 F	5376.47		Fe II	19 F	5567.08		Mn II	9 F
5206.02		Cr II	14 F	5382.26		Fe I	3 F	5572.6		Cr III	2 F
5206.84		Zr II	7 F	5386.27		Cr II	12 F	5573.84		V II	14 F
5209.1		Cr IV	3 F	5394.78		Mn II	9 F	5574.04		Mn II	9 F
5212.95		Fe I	19 F	5396.71		Ti I	10 F	5575.69		V II	14 F
5216.07		V II	6 F	5404.80		Fe I	20 F	5577.350	A	O I	3 F
5219.02		Cr II	13 F	5412.0		Fe III	1 F	5579.06		Cr II	12 F
5220.06		Fe II	19 F	5412.64		Fe II	17 F	5579.65		V II	14 F
5220.56		Fe I	3 F	5412.97		Fe I	20 F	5579.73		Mn II	9 F
5224?		Sc VII	1 F	5413.34		Fe II	16 F	5580.82		Fe II	39 F
5224.15		Fe I	3 F	5415.04		Mn II	9 F	5582.01		Fe II	2 F
5224.30		Cr II	13 F	5418.0		Cr III	2 F	5584.81		Ti I	9 F
5225.90		V II	6 F	5425.3		Fe VI	1 F	5587.2		Ca VI	2 F
5226.64		Cr I	15 F	5427.17		Fe I	20 F	5587.73		Ti I	7 F

I A		Element	Multiplet No.	I A	Element	Multiplet No.	I A		Element	Multiplet No.
5588.15		Fe II	39 F	5832.40	Eu II	2 F	6100.26		Fe I	30 F
5591.3		Cr III	2 F	5834.64	Fe I	2 F	6101.1		K IV	1 F
5591.9		Mn V	2 F	5836.21	Cr I	14 F	6104.67		Cr I	12 F
5595.31		Ti I	8 F	5843.6	Cr III	1 F	6104.8		V III	3 F
5600.1		Cr III	1 F	5843.90	Fe II	34 F	6106.17		Cr I	12 F
5600.66		Fe II	33 F	5846.3	Xe III	2 F	6111.14		Cr I	12 F
5601.6		Mn VI	2 F	5852.48	Cr I	14 F	6112.75		Cr I	12 F
5603.2		K VI	1 F	5852.8	Co II	2 F	6113.40		Fe I	17 F
5606.36		V II	14 F	5855.37	Zr II	6 F	6113.97		Fe I	30 F
5609.27		Fe I	31 F	5863.1	Mn V	2 F	6114.52		Fe I	18 F
5611.94		V II	14 F	5867.17	Fe I	2 F	6114.66		Cr I	12 F
5613.81		V II	14 F	5867.87	Ti I	6 F	6114.85		V II	19 F
5614.62		Ti I	8 F	5868.3	Mn V	1 F	6117.60		Cr I	11 F
5615.19		Cr II	12 F	5872.77	Fe I	2 F	6124.57		Ti II	22 F
5615.8		Ca VII	1 F	5876.23	Cr I	14 F	6140.20		Cr I	11 F
5618.9		Cr III	1 F	5876.92	Cr I	14 F	6147.13		Ti II	22 F
5625.0		Mn VI	2 F	5879.32	Eu II	2 F	6151.82		Ti II	26 F
5625.4		Co II	2 F	5884.9	Cr III	1 F	6152.9		Cl II	3 F
5629.54		Ti I	7 F	5889.0	Mn V	2 F	6159.3		Mn V	1 F
5630.85		Ti I	8 F	5893.89	Fe I	17 F	6159.3		V III	3 F
5631.0		Ca VI	2 F	5898.30	Fe I	2 F	6160.1		V III	3 F
5631.6		Fe VI	1 F	5900.64	Zr II	12 F	6164.64		Ti II	26 F
5634.78		V II	20 F	5901.26	Fe II	34 F	6165.35		Zr II	12 F
5639.55		Fe I	2 F	5902.64	Fe I	18 F	6167.7		Mn V	1 F
5643.02		Zr III	1 F	5907.1	Mn VI	2 F	6167.84		Cr I	12 F
5643.44		Fe II	39 F	5913.34	Cr I	13 F	6169.37		Cr I	12 F
5644.00		Fe II	18 F	5926.18	Cr I	14 F	6172.91		Ti II	28 F
5648?		Ca XV	1 F	5929.20	Zr II	12 F	6174.44		Cr I	12 F
5649.67		Fe II	39 F	5929.31	Eu II	2 F	6176.08		Cr I	12 F
5650.39		Fe II	2 F	5931.19	Fe I	17 F	6177.21		Fe I	17 F
5650.94		Fe II	39 F	5932.88	Zr II	6 F	6178.35		Fe I	18 F
5654.85		Fe II	17 F	5933.4	Mn VI	1 F	6180.9		Co II	2 F
5656.39		Fe I	3 F	5934.41	Fe I	2 F	6184.51		Cr I	11 F
5659.83		Fe II	33 F	5934.73	Cr I	14 F	6188.55		Fe II	44 F
5662.62		V II	14 F	5936.99	Fe I	2 F	6193.7		Zr III	3 F
5664.02		Ti I	8 F	5943.2	Co II	2 F	6196.53		Zr II	12 F
5669.58		Zr II	6 F	5945.1	Cr III	1 F	6196.75		Fe I	17 F
5675.73		Zr II	6 F	5946.87	Fe I	30 F	6215.6		V III	3 F
5678.0		Fe VI	1 F	5949.99	Cr I	13 F	6220.7		Mn V	1 F
5679.3		Mn VI	1 F	5951.24	Cr I	14 F	6223.4		K V	2 F
5683.56		Fe II	33 F	5952.21	Fe I	30 F	6226.64		Fe I	17 F
5689.3		Cr III	1 F	5955.61	Fe I	18 F	6227.19		Ti II	22 F
5694.8		Mn V	2 F	5968.87	Fe I	2 F	6229.2		K VI	1 F
5696.36		Fe I	2 F	5971.33	Fe I	17 F	6230.4		Cr V	2 F
5699.57		Ti I	6 F	5971.6	Co II	2 F	6231.27		Fe I	29 F
5703.3		Mn V	2 F	5972.59	Cr I	13 F	6233.9		V III	3 F
5703.64		Ni II	14 F	5975.39	Cr I	13 F	6249.35		Cr I	11 F
5708.96		Fe I	2 F	5982.55	Cr I	7 F	6249.75		Cr I	12 F
5711.46		Ni II	14 F	5983.99	Cr I	7 F	6250.51		Ti II	22 F
5712.7		Cr III	1 F	5988.76	Cr I	7 F	6251.33		Cr I	12 F
5713.35		Fe II	2 F	5990.31	Cr I	7 F	6258.22		Cr I	12 F
5715.94		Fe I	3 F	5991.0	Mn V	1 F	6277.3		Mn VI	1 F
5720.9		Fe VII	1 F	5992.15	Cr I	7 F	6280.22		Cr I	6 F
5721.2		F III	1 F	5999.99	Fe I	2 F	6300.23	L	O I	1 F
5721.35		Fe II	33 F	6007.34	Ni II	8 F	6310.2		S III	3 F
5724.62		Fe II	39 F	6010.53	Cr I	14 F	6314.58		Zr II	17 F
5725.92		Fe II	39 F	6013.28	Ti II	9 F	6316.6		K V	2 F
5733.0		F II	1 F	6015.26	Zr II	12 F	6317.64		Zr II	11 F
5737.59		Ti I	6 F	6016.15	Fe I	18 F	6328.46		Ti II	31 F
5741.11		Fe II	33 F	6018.54	Fe I	17 F	6333.46		Cr I	11 F
5742.07		Fe I	17 F	6019.63	Fe I	18 F	6339.70		Fe II	15 F
5745.49		Fe I	3 F	6026.18	Cr I	13 F	6342.98		Cr I	11 F
5745.70		Fe II	17 F	6029.7	Mn V	1 F	6344.56		Zr II	12 F
5746.96		Fe II	34 F	6040.31	V II	19 F	6346.2		Mn V	1 F
5746.99		Fe I	30 F	6040.94	Cr I	12 F	6349.5		K V	2 F
5750.95		Fe II	2 F	6044.94	Zr II	12 F	6360.66		Ti II	18 F
5753.83		Fe II	33 F	6045.80	Cr I	12 F	6363.88	L	O I	1 F
5754.8	N	N II	3 F	6047.46	Ti II	9 F	6365.52		Ni II	8 F
5755.39		Ti I	6 F	6049.37	Cr I	13 F	6367.28		Cr I	11 F
5755.60		Ti I	6 F	6053.14	Ti II	9 F	6372.11		V II	13 F
5766.4		Ca VI	2 F	6059.21	Cr I	6 F	6372.9		Fe X	1 F
5773.51		Zr III	1 F	6061.50	Cr I	12 F	6374.51	C	Fe X	1 F
5775.05		Fe I	2 F	6062.98	Cr I	12 F	6376.6		Cr V	2 F
5778.35		Fe II	33 F	6065.2	V III	4 F	6377.59		Zr II	12 F
5778.97		Zr II	6 F	6065.34	Ti II	26 F	6377.83		Ti II	31 F
5780.29		Cr I	14 F	6067.88	Cr I	12 F	6381.13		V II	13 F
5783.4		Mn VI	2 F	6069.2	Mn V	2 F	6382.03		V II	13 F
5785.4		Cr III	1 F	6071.35	Cr I	12 F	6391.51		Ti II	18 F
5794.16		Ti I	6 F	6077.80	Ti II	26 F	6393.72		Fe I	29 F
5795.58		Cr I	14 F	6083.2	Co II	2 F	6396.2		Mn V	1 F
5796.28		Eu II	2 F	6085.5	Fe VII	1 F	6396.30		Fe II	44 F
5799.53		Fe I	31 F	6085.9	Ca V	1 F	6404.46		Ni I	2 F
5804.45		Fe I	2 F	6087.77	Ti II	9 F	6405.27		Ti II	18 F
5809.43		Fe II	33 F	6088.5	Mn V	1 F	6405.67		V II	13 F
5812.53		Ti I	6 F	6093.32	Fe I	17 F	6408.5		Zr VI	1 F
5815.53		Fe I	17 F	6094.65	Fe I	30 F	6409.46		Ti II	31 F
5815.79		Cr I	14 F	6095.96	Ti II	9 F	6414.93		Cr I	11 F
5819.54		Cr I	14 F	6096.3	Fe III	10 F	6415.69		V II	13 F
5823.2		Cr III	1 F	6098.1	V III	4 F	6418.86		Zr II	17 F
5828.12		Ti I	6 F	6099.31	Fe I	17 F	6420.88		Cr I	6 F

FINDING LIST

Forbidden Lines

I A		Element	Multiplet No.	I A		Element	Multiplet No.	I A		Element	Multiplet No.
6422.66		Ti II	31 F	6729.85		Fe II	31 F	7093.98		Fe II	31 F
6423.45		Mn II	8 F	6730.25		Ni I	5 F	7102.84		Ni II	13 F
6430.7		Cr V	2 F	6730.99		Fe I	16 F	7107.04		Fe I	27 F
6431.11		V II	13 F	6731.2		Cr IV	2 F	7109.01		Fe I	28 F
6434.04		Ti II	18 F	6731.3		S II	2 F	7110.54		Zr II	4 F
6434.9		A V	1 F	6738.40		Sr II	1 F	7111.4		Cr IV	1 F
6436.55		Ti II	18 F	6739.63		Ti I	5 F	7115.47		Ti II	17 F
6437.70		Ni I	5 F	6739.91		Y II	2 F	7117.45		Cr I	10 F
6440.40		Fe II	15 F	6746.2		Cr IV	2 F	7119.56		Ti II	17 F
6446.5		K V	2 F	6758.48		Fe I	16 F	7122.07		Cr I	10 F
6449.21		Zr II	11 F	6760.61		Fe I	15 F	7125.65		Cr I	10 F
6456.04		V II	13 F	6763.56		Mn II	2 F	7126.40		Ti I	4 F
6462.3		Cr V	2 F	6768.65		Ti I	5 F	7130.24		Ni I	5 F
6467.52		Ni II	8 F	6785.44		Zr II	5 F	7131.13		Fe II	43
6473.52		Ti II	31 F	6787.00		Ni I	5 F	7131.55		Y II	1 F
6473.86		Fe II	44 F	6791.02		Ti I	5 F	7131.77		Fe II	30 F
6484.72		Cr I	11 F	6791.61		Ni II	8 F	7134.08		Fe I	15 F
6487.5		Zr III	3 F	6792.01		Zr II	11 F	7135.8		A III	1 F
6489.61		Ni I	5 F	6794.37		Ni II	7 F	7144.60		Y II	4 F
6497.76		V II	13 F	6794.8		K IV	1 F	7147.16		Fe I	15 F
6506.40		Zr II	17 F	6808.42		Fe I	16 F	7149.08		Zr II	5 F
6507.62		Fe II	32 F	6809.21		Fe II	31 F	7150.21		Ti I	4 F
6511.90		Cr I	11 F	6813.73		Ni II	8 F	7152.8		Ti III	3 F
6523.23		Mn II	8 F	6823.42		Fe I	27 F	7155.14		Fe II	14 F
6525.11		Fe I	15 F	6826.9		Kr III	1 F	7156.26		Zr II	5 F
6526.85		Si I	1 F	6829.01		Fe II	31 F	7156.94		Zr II	20 F
6527.4		N II	1 F	6829.24		Zr II	11 F	7168.42		Fe I	14 F
6535.99		Mn II	8 F	6830.06		Fe II	32 F	7169.0		A IV	2 F
6548.1	N	N II	1 F	6836.94		Fe I	15 F	7171.6		Cr IV	1 F
6548.47		Zr II	16 F	6850.42		Mn II	2 F	7171.98		Fe II	14 F
6548.87		Ti II	8 F	6864.4		Zr III	4 F	7173.92		Ti I	4 F
6550.29		Ti II	37 F	6868.18		Sr II	1 F	7177.04		Cr I	10 F
6558.51		Fe II	15 F	6872.17		Fe II	31 F	7180.4		Cr IV	1 F
6561.75		Cr I	11 F	6873.87		Fe II	43 F	7181.74		Cr I	10 F
6569.73		Ti II	34 F	6884.50		Fe I	15 F	7185.39		Cr I	10 F
6583.6	N	N II	1 F	6893.2		Cr IV	2 F	7193.97		Ni I	5 F
6583.66		Zr II	16 F	6896.18		Fe II	14 F	7196.91		Zr II	15 F
6586.7		Cr V	2 F	6906.1		Cr IV	1 F	7197.88		Zr II	20 F
6589.42		Ti II	8 F	6911.05		Ni II	7 F	7204.82		Zr II	4 F
6589.74		Si I	1 F	6915.6		Cr IV	2 F	7213.88		Ti I	4 F
6590.10		Mn II	8 F	6919		A XI	1 F	7214.69		Fe II	30 F
6590.88		Ti II	37 F	6932.4		Cr V	1 F	7219.15		Zr II	3 F
6591.0		Cr IV	2 F	6933.53		Zr II	5 F	7220.0		Fe III	15 F
6592.93		Ti II	8 F	6933.67		Fe II	31 F	7233.4		Cr IV	1 F
6595.88		Ti I	5 F	6941.63		Ni I	2 F	7236.0		A IV	2 F
6599.7		Fe VII	1 F	6944.91		Fe II	43 F	7238.29		Ti I	4 F
6603.99		Mn II	8 F	6954.69		Fe I	27 F	7243.99		Ni I	2 F
6604.30		Ni I	5 F	6956.25		Ni II	8 F	7250.78		Y II	4 F
6614.0		Fe III	10 F	6963.02		Ti II	17 F	7252.8		Cr V	1 F
6616.12		Ti II	34 F	6963.85		Zr II	20 F	7256.16		Ni II	7 F
6616.18		Fe I	16 F	6966.32		Fe II	31 F	7263.3		A IV	2 F
6617.06		Mn II	8 F	6972.07		Fe I	15 F	7264.43		Zr II	23 F
6617.12		Ti I	5 F	6978.57		Mn II	2 F	7264.51		Cr I	10 F
6617.17		Zr II	17 F	6984.07		Zr II	11 F	7269.33		Cr I	10 F
6622.05		Zr II	11 F	6989.04		Ni I	5 F	7273.06		Cr I	10 F
6625.75		Ti II	37 F	6991.75		Zr II	5 F	7273.33		Zr II	4 F
6631.20		Fe II	31 F	6991.8		Ti III	3 F	7274.6		Co II	3 F
6633.48		Fe I	15 F	6999.99		Ti II	17 F	7281.67		Fe II	30 F
6640.0		Cr IV	2 F	7002.02		Ni I	2 F	7287.25		Ti I	4 F
6642.57		Ti I	5 F	7003.95		Ti II	17 F	7290.42		Fe I	14 F
6642.66		Mn II	8 F	7005.23		Fe I	15 F	7291.46		Ca II	1 F
6646.31		Zr II	11 F	7006.3		A V	1 F	7294.30		V II	4 F
6647.05		Ti II	8 F	7008.84		Cr I	5 F	7307.76		Zr II	23 F
6650.61		Ti II	8 F	7008.89		Fe I	15 F	7307.82		Ni II	7 F
6651.26		Ti II	37 F	7011.24		Fe II	31 F	7309.90		V II	26 F
6656.77		Mn II	8 F	7013.33		Cr I	5 F	7316.44		Fe I	28 F
6660.68		Zr II	16 F	7016.21		Fe I	28 F	7317.43		Fe I	14 F
6661.7		Zr III	3 F	7016.80		Cr I	5 F	7318.6		O II	2 F
6668.16		Ni II	2 F	7017.94		Fe II	31 F	7319.4		O II	2 F
6668.63		Mn II	8 F	7021.0		Cr IV	1 F	7321.23		Fe I	28 F
6670.76		Ti I	5 F	7033.0		Ti III	3 F	7321.87		V II	12 F
6671.31		Ti II	34 F	7047.99		Fe II	31 F	7323.88		Ca II	1 F
6671.90		Fe II	31 F	7051.04		Ti II	17 F	7328.50		Ti I	4 F
6682.18		Fe I	16 F	7051.7		Cr IV	1 F	7329.9		O II	2 F
6692.48		Ti I	5 F	7054.37		Ni II	8 F	7330.7		O II	2 F
6693.12		Ti II	37 F	7055.06		Ti II	17 F	7332.0		A IV	2 F
6697.09		Zr II	16 F	7058.76		Zr II	3 F	7332.06		V II	4 F
6698.02		Fe II	32 F	7059.62	C	Fe XV	1 F	7338.0		Cr IV	1 F
6700.1		Cr V	1 F	7066.07		Zr II	15 F	7344.03		V II	12 F
6700.6		Ni XV	1 F	7075.26		Fe II	31 F	7353.77		V II	4 F
6700.61		Ni II	8 F	7078.2		Fe III	9 F	7355.92		La II	1 F
6700.68		Fe II	43 F	7078.25		Ni II	8 F	7370.00		V II	12 F
6701.83	C	Ni XV	1 F	7080.2		Fe XV	1 F	7370.94		Fe II	30 F
6705.5		Cr V	2 F	7086.7		Cr IV	2 F	7373.32		V II	4 F
6709.08		Mn II	2 F	7087.10		Cr I	10 F	7379.57		Ni II	2 F
6710.88		Fe I	16 F	7087.39		Ti I	4 F	7383.38		Cr I	10 F
6717.0		S II	2 F	7088.3		Fe III	15 F	7386.11		Zr II	5 F
6721.89		Fe I	15 F	7091.17		Y II	1 F	7387.23		Cr I	10 F
6722.02		Ti II	8 F	7091.68		Cr I	10 F	7387.47		V II	4 F
6725.67		Ti II	8 F	7092.89		Fe I	15 F	7387.74		V II	12 F

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
7388.16	Fe II	14 F	7689.65	Cr II	11 F	8039.68	Ti II	39 F
7390.6	Cr IV	1 F	7692.91	Mn II	7 F	8043.80	Cr I	9 F
7393.71	Ni I	1 F	7693.38	Mn II	7 F	8045.57	Cr I	9 F
7395.79	Ni I	2 F	7694.82	Ni II	7 F	8046.1	Cl IV	1 F
7398.95	V II	4 F	7696.30	Mn II	7 F	8047.93	Cr I	9 F
7404.36	Zr II	20 F	7706.06	Y II	3 F	8054.83	Fe I	13 F
7406.61	Fe I	14 F	7706.58	Cr II	20 F	8060.16	Ti II	6 F
7411.90	V II	4 F	7708.83	Fe I	1 F	8074.29	Ti II	7 F
7413.33	Ni II	2 F	7710.58	Zr II	23 F	8076.58	V II	31 F
7418.75	V II	4 F	7710.79	Fe II	30 F	8085.17	Ti II	6 F
7419.42	Fe II	1 F	7717.29	Ti I	24 F	8086.73	Fe I	24 F
7421.5	Co II	3 F	7724.7	S I	3 F	8091.87	Ti I	18 F
7430.26	V II	3 F	7733.12	Fe II	1 F	8098.70	Zr II	25 F
7431.08	V II	12 F	7740.11	Fe II	29 F	8101.03	V II	18 F
7431.2	V IV	2 F	7741.96	Fe I	14 F	8106.38	Ti II	39 F
7432.23	Fe II	47 F	7750.56	Cr II	11 F	8106.88	Cr II	20 F
7439.58	Fe I	28 F	7751.0	A III	1 F	8111.97	Ni I	8 F
7440.62	V II	3 F	7752.86	Cr II	11 F	8119.16	Fe II	38 F
7444.80	Zr II	3 F	7756.59	Fe I	14 F	8119.46	Ti I	18 F
7445.63	Zr II	4 F	7757.43	Cr II	11 F	8125.50	Cr II	1 F
7449.45	Fe II	30 F	7758.47	Cr II	11 F	8137.88	Zr II	19 F
7452.50	Fe II	14 F	7759.25	Fe I	14 F	8138.59	Ti II	7 F
7454.82	Zr II	5 F	7764.69	Fe II	30 F	8138.62	V II	31 F
7457.80	V II	4 F	7769.35	Zr II	4 F	8148.37	Ti I	18 F
7459.30	V II	4 F	7773.91	Fe I	13 F	8151.33	Fe I	1 F
7460.57	V II	3 F	7786.03	Zr II	3 F	8153.46	Ti I	18 F
7460.93	Zr II	3 F	7787.00	Y II	3 F	8160.66	Ti I	18 F
7464.39	Ni I	2 F	7793.9	Co II	3 F	8164.85	Fe I	13 F
7467.0	Co II	3 F	7797.2	Co II	3 F	8166.83	Ti II	24 F
7468.52	V II	4 F	7803.90	Fe II	1 F	8176.33	Ti I	18 F
7469.44	V II	3 F	7805.47	Mn II	7 F	8183.69	Cr I	9 F
7470.10	Y II	4 F	7805.66	Ti I	23 F	8185.52	Cr I	9 F
7475.84	V II	12 F	7805.96	Mn II	7 F	8189.44	Ti II	24 F
7477.26	V II	12 F	7806.22	Fe II	1 F	8192.33	Ti II	39 F
7479.79	Zr II	15 F	7806.88	Cr II	20 F	8194.57	Ni I	8 F
7489.15	V II	29 F	7835.98	Ti II	6 F	8201.77	Ni I	1 F
7497.68	V II	3 F	7845.41	Cr II	11 F	8220.64	Zr II	10 F
7507.44	Ni I	4 F	7847.76	Cr II	11 F	8225.25	Sc II	3 F
7510.54	Fe I	14 F	7849.08	Zr II	4 F	8228.16	Fe II	30 F
7515.13	V II	4 F	7853.3	Zr III	2 F	8229.81	Cr II	1 F
7518.35	V II	29 F	7853.51	Cr II	11 F	8229.81	Ti II	24 F
7518.81	Zr II	4 F	7859.60	Fe I	14 F	8231.57	Fe I	1 F
7523.27	Fe II	1 F	7867.83	Cr I	9 F	8233.22	Fe I	24 F
7526.46	V II	26 F	7869.5	P II	3 F	8235.69	V II	18 F
7526.94	V II	3 F	7874.23	Fe II	1 F	8245.12	Fe II	29 F
7530.9	Cl IV	1 F	7876.34	Fe I	13 F	8249.61	Ti I	3 F
7533.84	V II	3 F	7879.32	Mn II	7 F	8251.14	Cr I	9 F
7536	S XII	1 F	7888.6	Fe XI	1 F	8252.38	Fe II	38 F
7536.93	Fe I	14 F	7889.15	Zr II	19 F	8261.21	Sc II	3 F
7537.93	Mn II	7 F	7891.94 C	Fe XI	1 F	8261.59	Zr II	25 F
7539.67	Fe II	38 F	7893.57	Zr II	3 F	8268.36	Cr II	25 F
7540.14	V II	12 F	7894.10	Ti II	6 F	8271.32	Sc II	3 F
7540.54	Y II	3 F	7899.63	Fe I	14 F	8272.21	Cr II	25 F
7540.74	Mn II	7 F	7904.04	Y II	3 F	8275.57	Fe I	1 F
7541.42	Fe I	28 F	7906.95	Zr II	22 F	8279.98	Sc II	3 F
7541.95	V II	4 F	7908.30	Ni I	4 F	8284.1	Y V	1 F
7544.00	Fe II	14 F	7916.25	Ti II	6 F	8289.45	Fe I	13 F
7547.77	Mn II	7 F	7916.98	Fe II	29 F	8303.23	Ni II	2 F
7551.9	V IV	2 F	7917.03	Ti II	25 F	8307.67	Sc II	3 F
7552.38	Fe II	1 F	7926.90	Fe II	1 F	8308.68	Cr II	1 F
7556.03	V II	29 F	7929.70	Ni I	8 F	8315.71	Zr II	25 F
7567.6	Co II	3 F	7935.32	Fe I	26 F	8321.51	Fe I	26 F
7571.69	V II	3 F	7938.41	Cr I	9 F	8326.66	Sc II	3 F
7586.23	Y II	3 F	7940.71	Cr I	9 F	8328.78	Cr II	19 F
7604.53	Fe I	14 F	7945.02	Ti II	7 F	8337.65	Fe I	1 F
7611.2	V IV	2 F	7947.28	Cr II	20 F	8339.72	La III	1 F
7611.7	Co II	3 F	7954.24	Y II	3 F	8342.34	Fe II	30 F
7612.96	Ni II	7 F	7954.76	Zr II	25 F	8343.02	V II	17 F
7613.15	Fe II	30 F	7956.90	Ti II	39 F	8347.16	V II	17 F
7623.44	Zr II	3 F	7958.50	Fe II	29 F	8347.24	Sc II	3 F
7626.54	Zr II	15 F	7959.00	Fe I	1 F	8347.55	Fe I	1 F
7637.52	Fe II	1 F	7960.85	Cr II	20 F	8348.93	Ti II	30 F
7640.39	Cr II	11 F	7964.27	Fe I	1 F	8357.78	Cr II	1 F
7642.3	Co II	3 F	7965.96	Cr II	11 F	8363.05	Ti II	27 F
7642.61	Cr II	11 F	7966.36	Ti II	7 F	8367.07	Ti I	3 F
7647.06	Cr II	11 F	7974.31	Cr II	11 F	8371.34	Ti II	30 F
7658.84	Fe I	14 F	7975.58	Ti II	6 F	8380.68	Zr II	22 F
7658.92	Y II	3 F	7976.95	Ti II	6 F	8384.28	Sc II	3 F
7662.36	Zr II	23 F	7978.7	Mn IX	1 F	8400.89	Cr II	19 F
7664.67	Y II	3 F	7999.47	Fe II	1 F	8403.62	Sc II	3 F
7665.29	Fe II	1 F	8000.12	Cr II	1 F	8406.16	Ti II	27 F
7673.74	Fe II	38 F	8009.53	Fe II	46 F	8408.39	Zr II	19 F
7674.06	Fe II	46 F	8012.08	Fe II	46 F	8412.97	Fe I	12 F
7681.89	Cr II	11 F	8022.25	Fe I	13 F	8413.26	Fe II	38 F
7684.16	Cr II	11 F	8022.63	Fe II	29 F	8413.83	V II	17 F
7685.58	Fe II	46 F	8024	Ni XV	1 F	8416.96	Zr II	25 F
7686.19	Fe II	14 F	8024.21 C	Ni XV	1 F	8420.72	V II	2 F
7686.90	Fe II	1 F	8028.94	Ti II	7 F	8428.62	Zr II	22 F
7687.94	Fe II	46 F	8033.86	Ni II	7 F	8430.1	Ni VIII	5 F
7688.64	Cr II	11 F	8037.29	Fe II	30 F	8431.56	Fe I	1 F

FINDING LIST

Forbidden Lines

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
8433.7	Cl III	3 F	8702.70	Zr II	9 F	9105.8	Ni VIII	5 F
8436.37	Ti II	15 F	8703.03	Ti II	33 F	9106.17	Fe I	36 F
8437.9	V III	2 F	8703.79	Cr II	18 F	9106.60	V II	25 F
8441.27	Cr II	25 F	8704.24	Ni II	12 F	9108.42	Ti II	32 F
8444.83	Zr II	10 F	8705.08	Ti I	16 F	9108.53	Zr II	10 F
8445.28	Cr II	25 F	8706.79	Fe II	52 F	9116.41	Fe II	51 F
8446.11	Fe II	29 F	8708.23	Ti I	17 F	9125.8	Cl II	1 F
8446.39	Cr II	25 F	8709.38	V II	2 F	9133.63	Fe II	42 F
8456.74	Fe I	33 F	8715.84	Fe II	42 F	9134.50	Sc II	1 F
8457.2	V III	2 F	8716.24	Ti I	2 F	9136.73	Fe I	36 F
8466.38	Ni I	4 F	8719.70	Ti II	36 F	9137.01	Ti I	15 F
8466.95	Fe I	24 F	8721.54	Ti I	16 F	9144.25	V II	10 F
8467.54	Fe I	33 F	8722.54	Ti II	16 F	9149.11	Ti II	35 F
8469.75	Fe I	25 F	8723.13	Ti I	29 F	9165.30	V II	10 F
8471.07	V II	2 F	8727.4	C I	3 F	9166.00	V II	10 F
8481.6	Cl III	3 F	8728.09	Fe III	8 F	9179.54	Zr II	9 F
8485.90	V II	17 F	8730.02	Cr II	18 F	9180.13	Ti I	21 F
8488.19	Fe I	24 F	8731.38	Ti I	17 F	9183.58	V II	9 F
8488.93	Ti I	2 F	8735.0	V III	1 F	9189.22	Ti I	15 F
8490.18	V II	17 F	8738.1	Fe VII	4 F	9191.34	Sc II	1 F
8490.34	Fe I	25 F	8739.71	Ti I	16 F	9196.26	Fe II	51 F
8490.44	V II	11 F	8740.05	Ti I	17 F	9199.44	Ti I	15 F
8490.71	Ti II	15 F	8743.65	Zr II	10 F	9199.54	Ti II	35 F
8491.16	Ti II	27 F	8743.66	Ti II	29 F	9202.81	Zr II	8 F
8493.1	V III	1 F	8745.0	V III	1 F	9208.72	Zr II	8 F
8501.8	Cl III	3 F	8746.99	Fe I	33 F	9209.25	V II	9 F
8510.24	V II	11 F	8761.8	Ni VIII	5 F	9216.20	Fe II	51 F
8518.20	Sc II	2 F	8763.28	V II	2 F	9217.51	V II	27 F
8520.22	Cr II	19 F	8763.95	Ti II	36 F	9222.25	Cr II	16 F
8521.66	Ti I	3 F	8766.76	Zr II	10 F	9223.81	Cr II	24 F
8525.41	Zr II	10 F	8770.71	Ti I	17 F	9226.60	Fe II	13 F
8529.50	Ti II	15 F	8771.24	Fe I	12 F	9228.60	Cr II	24 F
8530.15	Cr II	19 F	8774.69	V II	11 F	9235.10	Ti I	15 F
8532.12	Ti I	30 F	8775.19	Fe I	33 F	9235.60	V II	10 F
8544.49	V II	28 F	8777.26	Ti I	2 F	9245.82	Ti I	15 F
8545.12	V II	2 F	8782.6	V III	2 F	9251.37	Ti I	21 F
8549.64	Ti II	16 F	8787.6	P I	1 F	9253.44	V II	9 F
8550.5	Cl III	3 F	8787.81	Ti I	17 F	9255.10	Y II	5 F
8553.73	Ti II	16 F	8789.70	Ti II	29 F	9256.51	V II	9 F
8553.87	V II	11 F	8792.09	Cr II	18 F	9258.83	Ti I	15 F
8561.42	Zr II	26 F	8792.49	Fe I	24 F	9267.54	Fe II	13 F
8564.56	Fe I	1 F	8794.80	Fe I	25 F	9268.77	V II	10 F
8565.94	Ti II	15 F	8798.79	Ti II	33 F	9273.10	Cr II	29 F
8567.60	Sc II	2 F	8798.82	Zr II	26 F	9274.58	Cr II	16 F
8575.4	V IV	1 F	8799.09	Ti I	2 F	9274.68	Cr II	29 F
8576.73	Ti I	22 F	8799.1	P I	1 F	9279.59	V II	10 F
8579.15	V II	11 F	8808.47	Ti I	17 F	9281.86	Ti I	15 F
8579.5	Cl II	1 F	8815.9	V IV	1 F	9282.92	V II	27 F
8582.52	V II	28 F	8826.02	Cr II	19 F	9285.20	Sc II	1 F
8585.04	Ti II	15 F	8830.3	Co II	1 F	9288.45	Ti I	15 F
8585.14	Fe I	33 F	8830.7	Fe III	8 F	9291.03	Zr II	9 F
8588.84	Ti I	2 F	8831.94	Cr II	18 F	9292.19	V II	25 F
8596.27	Fe I	33 F	8832.31	Ni I	7 F	9307.5	Zr III	5 F
8598.3	V III	2 F	8838.2	Fe III	8 F	9308.03	Ti I	21 F
8598.79	Ti I	29 F	8843.42	Ni I	1 F	9313.72	V II	9 F
8599.1	V III	1 F	8848.50	Ti I	17 F	9324.01	Y II	5 F
8612.91	Ti I	30 F	8850.73	Zr II	9 F	9324.8	Ti III	2 F
8613.35	Ti I	2 F	8851.13	Fe II	52 F	9336.2	Co II	1 F
8615.4	V III	2 F	8851.45	Ti I	17 F	9337.40	Cr II	23 F
8616.96	Fe II	13 F	8858.94	Cr II	18 F	9342.24	Cr II	23 F
8621.67	Zr II	26 F	8862.47	Zr II	26 F	9343.61	Cr II	23 F
8623.51	Fe I	33 F	8868.91	Fe I	1 F	9349.2	Zr III	5 F
8625.25	Zr II	8 F	8872.37	Zr II	8 F	9356.40	V II	27 F
8625.8	V III	1 F	8878.98	V II	2 F	9358.90	V II	9 F
8625.93	Ti II	16 F	8884.12	Ti I	2 F	9364.08	Cr II	16 F
8626.85	Ti I	16 F	8885.66	Fe II	42 F	9376.93	Zr II	2 F
8627.35	V II	11 F	8891.88	Fe II	13 F	9377.33	Ni II	1 F
8640.22	Ti I	22 F	8899.71	Cr II	16 F	9377.83	Zr II	24 F
8640.27	Ti I	29 F	8909.40	Zr II	2 F	9381.78	Cr II	23 F
8643.14	Fe I	12 F	8921.0	Zr III	5 F	9386.74	Cr II	23 F
8645.95	Ti I	22 F	8929.91	Cr II	18 F	9386.96	Fe I	12 F
8647.89	Fe I	1 F	8930.70	Ti I	17 F	9388.12	Cr II	23 F
8648.72	Ti II	16 F	8931.47	Fe II	49 F	9392.85	Eu II	1 F
8649.11	Sc II	2 F	8954.34	Zr II	9 F	9395.23	V II	9 F
8649.72	Fe I	24 F	8969.06	Zr II	22 F	9398.59	Ti II	21 F
8651.14	Ti II	29 F	8970.23	Ti I	2 F	9399.02	Fe II	13 F
8652.17	Cr II	18 F	8970.56	Cr II	18 F	9405.71	Ti II	21 F
8653.20	Cr II	19 F	8983.71	Eu II	1 F	9427.18	Cr II	23 F
8658.20	Ti I	16 F	9012.04	Cr II	18 F	9428.3	Ti III	2 F
8661.20	Ti II	15 F	9033.45	Fe II	13 F	9432.18	Cr II	23 F
8661.96	Ti II	15 F	9033.73	Cr II	16 F	9442.77	Y II	5 F
8665.66	Y II	6 F	9043.52	V II	10 F	9444.2	Fe III	12 F
8669.28	Ti I	2 F	9051.92	Fe II	13 F	9454.15	V II	9 F
8674.27	V II	17 F	9058.16	Zr II	2 F	9457.95	Cr II	23 F
8682.13	V II	2 F	9069.4	S III	1 F	9470.93	Fe II	13 F
8683.4	V III	1 F	9071.07	Ti II	35 F	9487.4	Ti III	2 F
8689.73	Ti I	16 F	9072.86	Cr II	24 F	9487.5	Xe II	1 F
8691.53	Zr II	19 F	9089.24	Zr II	10 F	9488.3	Ti III	2 F
8698.18	V II	11 F	9093.67	Fe I	36 F	9490.96	Zr II	8 F
8698.69	V II	11 F	9096.76	V II	10 F	9491.15	Cr II	29 F

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
9496.60	Zr II	27 F	10021.39	Ti II	4 F	10461.95	Zr II	24 F
9512.58	Cr II	16 F	10028.62	Fe II	28 F	10464.94	Zr II	1 F
9513.87	Fe II	41 F	10028.71	Zr II	1 F	10475.96	Ti I	27 F
9517.76	Fe II	52 F	10034.9	Zr III	5 F	10486.97	Sc II	6 F
9522.24	V II	32 F	10036.79	Fe II	40 F	10491.99	Cr II	28 F
9532.1	S III	1 F	10038.79	Fe II	48 F	10494.00	Cr II	28 F
9534.75	Zr II	14 F	10055.97	Fe I	11 F	10500.65	Cr II	10 F
9543.3	Zr III	5 F	10066.92	Ti II	5 F	10502.67	Cr II	10 F
9544.00	Ti I	28 F	10066.98	Ti II	5 F	10503.47	Ti II	3 F
9558.5	Co VII	5 F	10074.84	Eu II	1 F	10504.3	Fe III	8 F
9565.8	Ni VIII	5 F	10075.00	Fe I	38 F	10508.07	Fe II	28 F
9570.24	V II	9 F	10083.37	Zr II	13 F	10510.25	V II	15 F
9582.55	Zr II	9 F	10098.2	Cr VIII	1 F	10519.77	Ti I	27 F
9590.94	Cr II	16 F	10116.66	Ti II	4 F	10553.58	Mn II	1 F
9594.5	Ti III	2 F	10119.57	Cr II	22 F	10561.05	V II	24 F
9595.12	Ti I	28 F	10120.75	Zr II	24 F	10568.84	Ti I	27 F
9595.85	V II	32 F	10125.99	Ti II	5 F	10569.44	Sc II	7 F
9607.90	Zr II	8 F	10128.19	Zr II	27 F	10576.98	V II	15 F
9608.6	Fe III	12 F	10136.59	Cr II	10 F	10592.32	Fe I	23 F
9619.74	Fe I	12 F	10137.00	Cr II	10 F	10594.89	Fe II	40 F
9622.68	Ti I	28 F	10138.47	Cr II	10 F	10601.80	Fe I	37 F
9635.9	Cr V	4 F	10148.57	Ti II	4 F	10603.65	Zr II	1 F
9639.4	Co II	1 F	10163.13	Ti II	5 F	10608.1	Fe III	14 F
9642.42	Ti II	21 F	10178.29	Fe I	11 F	10608.18	Ti II	3 F
9644.96	V II	25 F	10188.1	Co II	1 F	10627.5	Ni VIII	6 F
9649.94	Ti II	21 F	10196.82	Fe I	36 F	10640.19	Ti II	3 F
9651.02	Cr II	17 F	10202.05	Ti II	5 F	10640.4	Fe III	13 F
9652.70	Fe II	13 F	10206.5	Xe III	1 F	10642.86	Ti I	27 F
9670.04	Zr II	24 F	10208.43	Zr II	14 F	10660.35	Sc II	7 F
9670.87	Zr II	27 F	10209.10	Ni II	12 F	10671.7	Co VII	5 F
9671.2	Zr III	5 F	10209.78	Cr II	10 F	10676.61	Ti II	3 F
9674.66	Ti I	28 F	10210.20	Cr II	10 F	10696.87	Cr II	27 F
9681.84	Ti I	28 F	10211.69	Cr II	10 F	10718.16	Ni II	1 F
9682.13	Fe II	41 F	10215.85	Cr II	22 F	10719.84	Cr II	10 F
9686.70	Cr II	16 F	10223.27	Cr II	22 F	10746.80 C	Fe XIII	1 F
9694.01	Eu II	1 F	10223.27	Ti II	5 F	10747.64	Ti II	3 F
9697.42	Ti I	28 F	10225.3	Ni VIII	6 F	10749.7	Fe XIII	1 F
9701.3	Fe III	11 F	10229.79	Fe I	11 F	10755.91	Cr II	27 F
9704.10	Zr II	9 F	10235.17	Fe I	36 F	10758.04	Cr II	27 F
9706.8	Ti III	2 F	10245.4	Co II	1 F	10758.32	Ti II	3 F
9720.20	Ti I	20 F	10261.18	Zr II	1 F	10770.38	Fe I	36 F
9731.40	Fe I	23 F	10262.84	Fe I	11 F	10771.88	Fe I	23 F
9733.52	V II	16 F	10264.65	Fe I	23 F	10780.17	Sc II	7 F
9752.5	Co VII	5 F	10280.7	Co II	1 F	10784.80	Ti II	3 F
9755.81	Fe II	50 F	10284.3	S II	3 F	10796.00	Cr II	27 F
9774.53	Zr II	14 F	10291.94	V II	15 F	10796.2	Fe XIII	1 F
9775.94	Fe I	35 F	10297.11	Cr II	28 F	10796.48	Fe II	45 F
9778.67	Ti I	28 F	10297.14	Ti I	27 F	10797.66	Cr II	27 F
9778.70	Fe I	12 F	10298.63	Cr II	28 F	10797.95 C	Fe XIII	1 F
9786.00	Ti I	28 F	10299.05	Cr II	28 F	10798.14	Cr II	27 F
9795.21	Fe II	28 F	10299.79	Cr II	22 F	10800.75	V II	15 F
9806.20	Cr II	17 F	10300.86	Ti II	5 F	10807.8	Cr V	5 F
9808.9	C I	1 F	10305.67	Cr II	22 F	10819.8	S I	1 F
9822.50	Fe I	39 F	10307.34	Cr II	22 F	10835.22	V II	23 F
9823.4	C I	1 F	10314.96	Fe I	38 F	10860.44	Zr II	1 F
9826.83	Fe I	11 F	10317.7	S II	3 F	10867.84	Fe I	37 F
9831.29	Ti I	20 F	10318.68	Fe I	23 F	10872.05	Sc II	5 F
9849.5	C I	1 F	10321.34	Fe II	40 F	10882.6	Fe III	14 F
9862.21	Fe II	40 F	10327.56	Fe II	28 F	10890.02	Zr II	13 F
9866.49	Cr II	17 F	10331.43	Cr II	10 F	10901.79	Ti II	3 F
9870.08	Zr II	8 F	10331.86	Cr II	10 F	10908.34	Fe I	34 F
9884.29	Ti I	20 F	10333.39	Cr II	10 F	10912.8	Co VII	5 F
9885.74	Ni II	1 F	10336.0	S II	3 F	10916.5	Fe III	13 F
9886.87	Zr II	27 F	10351.92	Zr II	13 F	10916.64	Fe I	41 F
9887.18	Ni I	6 F	10355.58	Zr II	1 F	10921.07	Ni II	1 F
9902.2	Kr III	1 F	10355.93	V II	15 F	10956.10	Ti II	3 F
9903.31	La II	1 F	10356.68	Ti I	27 F	10965.77	Ti II	14 F
9916.30	Eu II	1 F	10366.26	Cr II	22 F	10972.9	Co II	1 F
9917.9	S VIII	1 F	10369.7	S II	3 F	10983.23	V II	23 F
9918.01	Fe II	51 F	10372.30	Cr II	22 F	10986.0	Co VII	6 F
9926.0	Zr III	5 F	10373.30	Cr II	21 F	10991.52	Si I	2 F
9937.20	Zr II	27 F	10373.98	Cr II	22 F	11011.70	La II	1 F
9937.27	Fe II	51 F	10379.73	Ti II	5 F	11018.07	Fe I	32 F
9941.20	Fe II	51 F	10380.40	Cr II	21 F	11019.11	V II	24 F
9942.2	Fe III	11 F	10382.14	V II	15 F	11024.82	Ti II	13 F
9947.19	Zr II	14 F	10386.86	Ti I	27 F	11044.11	Fe I	35 F
9949.32	Fe II	48 F	10388.07	Cr II	21 F	11049.28	Ti I	26 F
9953.5	Co VII	5 F	10394.3	Cr V	5 F	11056.70	Cr II	26 F
9957.23	Ni II	12 F	10395.4	N I	3 F	11057.76	Ti II	14 F
9957.44	Fe II	28 F	10399.33	Sc II	6 F	11058.94	Cr II	26 F
9960.0	Fe III	8 F	10400.53	Fe II	40 F	11069.08	Fe I	37 F
9969.6	Fe III	8 F	10404.1	N I	3 F	11078.26	Ti II	2 F
9972.59	Ti II	5 F	10431.10	Fe II	40 F	11080.02	Ti II	14 F
9974.41	Fe I	23 F	10432.60	Fe II	48 F	11084.87	Ti I	32 F
9977.1	Ni VIII	5 F	10443.95	Fe I	11 F	11088.0	Fe III	13 F
9982.17	V II	16 F	10447.44	Ti I	27 F	11096.98	Zr II	18 F
9986.60	Fe I	39 F	10452.56	Fe I	11 F	11098.96	V II	23 F
9997.3	Mn X	1 F	10456.86	Sc II	6 F	11107.3	Fe III	13 F
9998.31	Fe I	11 F	10458.9	Zr III	5 F	11110.92	Ti II	2 F
10013.88	Fe II	41 F	10459.79	Ni II	11 F	11117.80	Ti II	13 F

FINDING LIST

Forbidden Lines

I A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
11123.53	Ti I	26 F	11595.50	Zr II	18 F	11951.78	Cr II	9 F
11132.24	Zr II	21 F	11602.41	Ti II	1 F	11971.26	Ti II	1 F
11151.54	Ti II	14 F	11606.00	V II	23 F	11997.42	Fe I	40 F
11173.94	Ti II	14 F	11611.10	Ti II	12 F	12012.60	Ti I	1 F
11178.94	Ti II	13 F	11616.88	Ni II	1 F	12019.17	Fe I	40 F
11185.14	Ti I	26 F	11618.68	Ti II	2 F	12024.89	Ti I	14 F
11185.70	Ti II	14 F	11619.10	V II	1 F	12025.23	Fe I	22 F
11191.43	Ti I	26 F	11621.54	Ti I	1 F	12061.0	Ti III	1 F
11193.04	Ti I	26 F	11658.88	V II	22 F	12072.48	Fe I	40 F
11202.11	Fe I	41 F	11659.62	Zr II	18 F	12094.78	Zr II	21 F
11203.92	Zr II	13 F	11665.66	Ti I	31 F	12095.67	Ti I	14 F
11228.14	Ti II	2 F	11679.85	Ti I	14 F	12168.18	Cr II	9 F
11233.80	Fe I	22 F	11681.81	Ti I	14 F	12168.8	Co II	1 F
11237.04	Fe I	32 F	11690.94	Ti I	14 F	12168.80	Ti I	1 F
11242.12	Ti II	2 F	11698.62	Zr II	21 F	12170.50	Cr II	9 F
11246.87	V II	1 F	11714.28	Ti II	12 F	12178.83	Cr II	9 F
11261.79	Ti I	26 F	11715.20	V II	1 F	12209.6	Co VII	6 F
11272.6	Fe III	13 F	11735.52	Ti II	1 F	12211.22	Zr II	18 F
11280.5	Co II	1 F	11748.60	Ti I	14 F	12219.66	V II	22 F
11284.9	Fe III	13 F	11757.66	V II	1 F	12300.16	Cr II	26 F
11305.8	S I	1 F	11764.23	Fe I	32 F	12300.77	Cr II	26 F
11315.52	V II	30 F	11765.16	Fe I	40 F	12323.27	Ni II	11 F
11324.18	V II	22 F	11767.30	Ti I	14 F	12372.55	Fe I	22 F
11332.50	Ti I	26 F	11771.95	Ti I	1 F	12387.48	Fe I	22 F
11347.6	Co VII	6 F	11778.39	Ti II	12 F	12417.8	Ti III	1 F
11359.87	Ni II	11 F	11782.27	Ti II	1 F	12460.65	Cr II	9 F
11368.21	V II	22 F	11782.63	Cr II	26 F	12463.08	Cr II	9 F
11396.50	Ti II	2 F	11784.62	Cr II	26 F	12471.70	Cr II	9 F
11402.97	Ti I	26 F	11785.17	Cr II	26 F	12645.23	Fe I	22 F
11414.22	V II	1 F	11786.08	Fe I	40 F			
11432.93	Ti II	1 F	11789.27	Cr II	9 F			
11444.61	V II	1 F	11790.50	Fe I	32 F			
11444.66	V II	30 F	11791.90	Fe I	22 F			
11450.66	Fe I	40 F	11792.55	Ti I	14 F			
11458.27	Ti II	2 F	11799.5	Ti III	1 F			
11471.69	V II	23 F	11823.03	Ti II	12 F			
11477.29	Ti II	1 F	11835.06	Ti I	14 F			
11478.92	Ti II	38 F	11849.83	Ti I	1 F			
11479.51	V II	23 F	11852.49	V II	22 F			
11483.2	P II	1 F	11856.02	Ti I	1 F			
11495.96	Fe I	32 F	11857.28	V II	1 F			
11509.6	Ni VIII	6 F	11857.96	Ti II	12 F			
11518.28	Fe I	32 F	11881.68	Ti I	14 F			
11520.46	Ti I	31 F	11884.57	Ti II	12 F			
11521.31	Ti I	33 F	11896.48	Sc II	4 F			
11524.46	Fe I	32 F	11898.2	P II	1 F			
11537.68	Fe I	22 F	11918.75	V II	21 F			
11557.08	Ti II	1 F	11933.60	Ti I	14 F			
11568.38	V II	22 F	11943.75	Cr II	9 F			
11580.17	V II	1 F	11950.77	Ti I	14 F			

Publications in the National Standard Reference Data Series
National Bureau of Standards

You may use this listing as your order form by checking the proper box of the publication(s) you desire or by providing the full identification of the publication you wish to purchase. The full letter symbols with each publication number and full title of the publication and author must be given in your order, e.g. NSRDS–NBS–21, Kinetic Data on Gas Phase Unimolecular Reactions, by S. W. Benson and H. E. O'Neal.

Pay for publications by check, money order, or Superintendent of Documents coupons or deposit account. Make checks and money orders payable to Superintendent of Documents. Foreign remittances should be made either by international money order or draft on an American bank. Postage stamps are not acceptable.

No charge is made for postage to destinations in the United States and possessions, Canada, Mexico, and certain Central and South American countries. To other countries, payments for documents must cover postage. Therefore, one-fourth of the price of the publication should be added for postage.

Send your order together with remittance to Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

- ☐ NSRDS-NBS 1, **National Standard Reference Data System—Plan of Operation,** by E. L. Brady and M. B. Wallenstein, 1964 (15 cents), SD Catalog No. C13.48:1.
- ☐ NSRDS-NBS 2, **Thermal Properties of Aqueous Uni-univalent Electrolytes,** by V. B. Parker, 1965 (45 cents), SD Catalog No. C13.48:2.
- ☐ NSRDS-NBS 3, Sec. 1, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si II, Si III, Si IV,** by C. E. Moore, 1965 (35 cents), SD Catalog No. C13.48:3/Sec.1.
- ☐ NSRDS-NBS 3, Sec. 2, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si I,** by C. E. Moore, 1967 (20 cents), SD Catalog No. C13.48:3/Sec.2.
- ☐ NSRDS-NBS 3, Sec. 3, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, C I, C II, C III, C IV, C V, C VI,** by C. E. Moore, 1970 ($1), SD Catalog No. C13.48:3/Sec.3.
- ☐ NSRDS-NBS 3, Sec. 4, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, N IV, N V, N VI, N VII,** by C. E. Moore, 1971 (55 cents), SD Catalog No. C13.48:3/Sec. 4.
- ☐ NSRDS-NBS 4, **Atomic Transition Probabilities, Vol. I, Hydrogen Through Neon,** by W. L. Wiese, M. W. Smith, and B. M. Glennon, 1966 ($2.50), SD Catalog No. C13.48:4/Vol.I.
- ☐ NSRDS-NBS 5, **The Band Spectrum of Carbon Monoxide,** by P. H. Krupenie, 1966 (70 cents), SD Catalog No. C13.48:5.
- ☐ NSRDS-NBS 6, **Tables of Molecular Vibrational Frequencies, Part 1,** by T. Shimanouchi, 1967 (40 cents), SD Catalog No. C13.48:6/Pt.1.
- ☐ NSRDS-NBS 7, **High Temperature Properties and Decomposition of Inorganic Salts, Part 1. Sulfates,** by K. H. Stern and E. L. Weise, 1966 (35 cents), SD Catalog No. C13.48:7/Pt.1.
- ☐ NSRDS-NBS 8, **Thermal Conductivity of Selected Materials,** by R. W. Powell, C. Y. Ho, and P. E. Liley, 1966 ($3). PB189698*
- ☐ NSRDS-NBS 9, **Tables of Bimolecular Gas Reactions,** by A. F. Trotman-Dickenson and G. S. Milne, 1967 ($2), SD Catalog No. C13.48:9.
- ☐ NSRDS-NBS 10, **Selected Values of Electric Dipole Moments for Molecules in the Gas Phase,** by R. D. Nelson, Jr., D. R. Lide, Jr., and A. A. Maryott, 1967 (40 cents), SD Catalog No. C13.48:10.
- ☐ NSRDS-NBS 11, **Tables of Molecular Vibrational Frequencies, Part 2,** by T. Shimanouchi, 1967 (30 cents), SD Catalog No. C13.48:11/Pt.2.
- ☐ NSRDS-NBS 12, **Tables for the Rigid Asymmetric Rotor: Transformation Coefficients from Symmetric to Asymmetric Bases and Expectation Values of P_z^2, P_z^4, and P_z^6,** by R. H. Schwendeman, 1968 (60 cents), SD Catalog No. C13.48:12.
- ☐ NSRDS-NBS 13, **Hydrogenation of Ethylene on Metallic Catalysts,** by J. Horiuti and K. Miyahara, 1968 ($1), SD Catalog No. C13.48:13.
- ☐ NSRDS-NBS 14, **X-Ray Wavelengths and X-Ray Atomic Energy Levels,** by J. A. Bearden, 1967 (40 cents), SD Catalog No. C13.48:14.

* Available from National Technical Information Service, Springfield, Virginia 22151.

- ☐ NSRDS-NBS 15, **Molten Salts: Vol. 1, Electrical Conductance, Density, and Viscosity Data,** by G. J. Janz, F. W. Dampier, G. R. Lakshminarayanan, P. K. Lorenz, and R. P. T. Tomkins, 1968 ($3), SD Catalog No. C13.48:15/Vol.1.
- ☐ NSRDS-NBS 16, **Thermal Conductivity of Selected Materials, Part 2,** by C. Y. Ho, R. W. Powell, and P. E. Liley, 1968 ($2), SD Catalog No. C13.48:16/Pt.2.
- ☐ NSRDS-NBS 17, **Tables of Molecular Vibrational Frequencies, Part 3,** by T. Shimanouchi, 1968 (30 cents), SD Catalog No. C13.48:17/Pt.3.
- ☐ NSRDS-NBS 18, **Critical Analysis of the Heat-Capacity Data of the Literature and Evaluation of Thermodynamic Properties of Copper, Silver, and Gold From 0 to 300°K,** by G. T. Furukawa, W. G. Saba, and M. L. Reilly, 1968 (40 cents), SD Catalog No. C13.48:18.
- ☐ NSRDS-NBS 19, **Thermodynamic Properties of Ammonia as an Ideal Gas,** by L. Haar, 1968 (20 cents), SD Catalog No. C13.48:19.
- ☐ NSRDS-NBS 20, **Gas Phase Reaction Kinetics of Neutral Oxygen Species,** by H. S. Johnston, 1968 (45 cents), SD Catalog No. C13.48:20.
- ☐ NSRDS-NBS 21, **Kinetic Data on Gas Phase Unimolecular Reactions,** by S. W. Benson and H. E. O'Neal, 1970 ($7), SD Catalog No. C13.48:21.
- ☐ NSRDS-NBS 22, **Atomic Transition Probabilities, Vol. II, Sodium Through Calcium, A Critical Data Compilation,** by W. L. Wiese, M. W. Smith, and B. M. Miles, 1969 ($4.50), SD Catalog No. C13.48:22/Vol.II.
- ☐ NSRDS-NBS 23, **Partial Grotrian Diagrams of Astrophysical Interest,** by C. E. Moore and P. W. Merrill, 1968 (55 cents), SD Catalog No. C13.48:23.
- ☐ NSRDS-NBS 24, **Theoretical Mean Activity Coefficients of Strong Electrolytes in Aqueous Solutions from 0 to 100° C,** by Walter J. Hamer, 1968 ($4.25), SD Catalog No. C13.48:24.
- ☐ NSRDS-NBS 25, **Electron Impact Excitation of Atoms,** by B. L. Moiseiwitsch and S. J. Smith, 1968 ($2), SD Catalog No. C13.48:25.
- ☐ NSRDS-NBS 26, **Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions,** by J. L. Franklin, J. G. Dillard, H. M. Rosenstock, J. T. Herron, K. Draxl, and F. H. Field, 1969 ($4), SD Catalog No. C13.48:26.
- ☐ NSRDS-NBS 27, **Thermodynamic Properties of Argon from the Triple Point to 300 K at Pressures to 1000 Atmospheres,** by A. L. Gosman, R. D. McCarty, and J. G. Hust, 1969 ($1.25), SD Catalog No. C13.48:27.
- ☐ NSRDS-NBS 28, **Molten Salts: Vol. 2, Section 1, Electrochemistry of Molten Salts: Gibbs Free Energies and Excess Free Energies From Equilibrium-Type Cells,** by G. J. Janz and C. G. M. Dijkhuis. **Section 2, Surface Tension Data,** by G. J. Janz, G. R. Lakshminarayanan, R. P. T. Tomkins, and J. Wong, 1969 ($2.75), SD Catalog No. C13.48:28/Vol.2.
- ☐ NSRDS-NBS 29, **Photon Cross Sections, Attenuation Coefficients, and Energy Absorption Coefficients From 10 keV to 100 GeV,** by J. H. Hubbell, 1969 (75 cents), SD Catalog No. C13.48:29.

- ☐ NSRDS-NBS 30, **High Temperature Properties and Decomposition of Inorganic Salts, Part 2, Carbonates,** by K. H. Stern and E. L. Weise, 1969 (45 cents). SD Catalog No. C13.48:30/Pt. 2.
- ☐ NSRDS-NBS 31, **Bond Discrimination Energies in Simple Molecules,** by B. deB. Darwent, 1970 (55 cents). SD Catalog No. C13.48:31.
- ☐ NSRDS-NBS 32, **Phase Behavior in Binary Multicomponent Systems at Elevated Pressures: η-Pentane and Methane-η-Pentane,** by V. M. Berry and B. H. Sage, 1970 (70 cents). SD Catalog No. C13.48.32.
- ☐ NSRDS-NBS 33, **Electrolytic and Conductance and the Conductance of the Acids in Water,** by W. J. Hamer and H. J. DeWane, 1970 (50 cents). SD Catalog No. C13.48:34.
- ☐ NSRDS-NBS 34, **Ionization Potentials and Ionization Limits Derived from the Analyses of Optical Spectra,** by C. E. Moore, 1970 (75 cents). SD Catalog No. C13.48:33.
- ☐ NSRDS-NBS 35, **Atomic Energy Levels, Vol. I ^{1}H to ^{23}V; Vol. II ^{24}Cr to ^{41}Nb; Vol III ^{22}Mo to ^{57}La—^{72}Hf to ^{89}Ac,** by C. E. Moore, 1971 (In press). SD Catalog No. C13.48:35/Vols. I, II, and III.
- ☐ NSRDS-NBS 36, **Micelle Concentrations of Aqueous Surfactant Systems,** by P. Mukerjee and K. J. Mysels, 1971 (In press). SD Catalog No. C13.48:36.
- ☐ NSRDS-NBS 37, **JANAF Thermochemical Tables, 2d Edition,** by D. R. Stull, H. Prophet, et al., 1971 (in press), SD Catalog No. C13.48:37.
- ☐ NSRDS-NBS 38, **Critical Review of Ultraviolet Photoabsorption Cross Sections for Molecules of Astrophysical and Aeronomic Interest,** by R. D. Hudson, 1971 (in press), SD Catalog No. C13.48:38.
- ☐ NSRDS-NBS 39, **Tables of Molecular Vibrational Frequencies, Consolidated Volume I,** by T. Shimanouchi, 1971 (in press). SD Catalog No. C13.48:39.
- ☐ NSRDS-NBS 40, **A Multiplet Table of Astrophysical Interest,** by C. E. Moore, 1971 ($). SD Catalog No. C13.48:40.

Announcement of New Publications in

National Standard Reference Data Series

Superintendent of Documents,
Government Printing Office,
Washington, D.C. 20402

Dear Sir:

(cut here)

Please add my name to the announcement list of new publications to be issued in the series: National Standard Reference Data Series—National Bureau of Standards.

Name.....

Company.....

Address.....

City..... State..... Zip Code.....

(Notification key N-337)

FORM NBS-114A (1-71)

U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET	1. PUBLICATION OR REPORT NO. NSRDS-NBS 40	2. Gov't Accession No.	3. Recipient's Accession No.

4. TITLE AND SUBTITLE

A Multiplet Table of Astrophysical Interest

5. Publication Date: February 1972

6. Performing Organization Code

7. AUTHOR(S)
Charlotte E. Moore

8. Performing Organization

9. PERFORMING ORGANIZATION NAME AND ADDRESS

NATIONAL BUREAU OF STANDARDS
DEPARTMENT OF COMMERCE
WASHINGTON, D.C. 20234

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address

Same as No. 9

13. Type of Report & Period Covered: Final

14. Sponsoring Agency Code

15. SUPPLEMENTARY NOTES

16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)

Pending the completion of a current edition, the 1945 Multiplet Table is being reprinted here to meet continuing demands. The leading lines in 196 atomic spectra of 85 chemical elements are listed in related groups called multiplets. Estimated intensities, excitation potentials and multiplet designations are given for the individual lines, and each multiplet is assigned a number. An extensive bibliography covers the source material used for the compilation.

The Table is presented in two parts:

Part I includes the multiplets, with the spectra of each element being given in order of increasing ionization, and the elements in order of increasing atomic number.

Part II is a Finding List in which all the lines in Part I are entered in order of increasing wavelength, with their multiplet numbers.

The range of the Table is from 2951 Å to 13164 Å. A supplementary table of "Forbidden Lines" extends from 2972 Å to 12645 Å.

17. KEY WORDS (Alphabetical order, separated by semicolons)
Atomic spectra, multiplet table; Finding list, atomic spectra; Multiplet table; Spectra, atomic.

18. AVAILABILITY STATEMENT

[X] UNLIMITED.

[ ] FOR OFFICIAL DISTRIBUTION. DO NOT RELEASE TO NTIS.

19. SECURITY CLASS (THIS REPORT): UNCLASSIFIED

21. NO. OF PAGES: 253

20. SECURITY CLASS (THIS PAGE): UNCLASSIFIED

22. Price $2.00

*U. S. GOVERNMENT PRINTING OFFICE : 1972 O - 459-724

USCOMM-DC 66244-P71

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH reports National Bureau of Standards research and development in physics, mathematics, chemistry, and engineering. Comprehensive scientific papers give complete details of the work, including laboratory data, experimental procedures, and theoretical and mathematical analyses. Illustrated with photographs, drawings, and charts.

Published in three sections, available separately:

- **Physics and Chemistry**

Papers of interest primarily to scientists working in these fields. This section covers a broad range of physical and chemical research, with major emphasis on standards of physical measurement, fundamental constants, and properties of matter. Issued six times a year. Annual subscription: Domestic, $9.50; $2.25 additional for foreign mailing.

- **Mathematical Sciences**

Studies and compilations designed mainly for the mathematician and theoretical physicist. Topics in mathematical statistics, theory of experiment design, numerical analysis, theoretical physics and chemistry, logical design and programming of computers and computer systems. Short numerical tables. Issued quarterly. Annual subscription: Domestic, $5.00; $1.25 additional for foreign mailing.

- **Engineering and Instrumentation**

Reporting results of interest chiefly to the engineer and the applied scientist. This section includes many of the new developments in instrumentation resulting from the Bureau's work in physical measurement, data processing, and development of test methods. It will also cover some of the work in acoustics, applied mechanics, building research, and cryogenic engineering. Issued quarterly. Annual subscription: Domestic, $5.00; $1.25 additional for foreign mailing.

TECHNICAL NEWS BULLETIN

The best single source of information concerning the Bureau's research, developmental, cooperative, and publication activities, this monthly publication is designed for the industry-oriented individual whose daily work involves intimate contact with science and technology—*for engineers, chemists, physicists, research managers, product-development managers, and company executives.* Annual subscription. Domestic, $3.00; $1.00 additional for foreign mailing.

NONPERIODICALS

Applied Mathematics Series. Mathematical tables, manuals, and studies.

Building Science Series. Research results, test methods, and performance criteria of building materials, components, systems, and structures.

Handbooks. Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications. Proceedings of NBS conferences, bibliographies, annual reports, wall charts, pamphlets, etc.

Monographs. Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

National Standard Reference Data Series. NSRDS provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated.

Product Standards. Provide requirements for sizes, types, quality, and methods for testing various industrial products. These standards are developed cooperatively with interested Government and industry groups and provide the basis for common understanding of product characteristics for both buyers and sellers. Their use is voluntary.

Technical Notes. This series consists of communications and reports (covering both other agency and NBS-sponsored work) of limited or transitory interest.

Federal Information Processing Standards Publications. This series is the official publication within the Federal Government for information on standards adopted and promulgated under the Public Law 89–306, and Bureau of the Budget Circular A–86 entitled, Standardization of Data Elements and Codes in Data Systems.

Consumer Information Series. Practical information, based on NBS research and experience, covering areas of interest to the consumer. Easily understandable language and illustrations provide useful background knowledge for shopping in today's technological marketplace.

NBS Special Publication 305, Supplement 1, Publications of the NBS, 1968-1969. When ordering, include Catalog No. C13.10:305. Price $4.50; $1.25 additional for foreign mailing.

Order NBS publications from: Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
Washington, D.C. 20234

OFFICIAL BUSINESS

Penalty for Private Use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE

U.S.MAIL